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ABSTRACT

A project undertaken to determine the feasibility of integrating components of secondary-level tech prep and school-to-work programs into adult basic and literacy education (ABLE) programs. Applied academics curriculum materials developed by the Center for Occupational Research and Development (CORD) and the Agency for Instructional Technology (AIT) were reviewed, and selected elements of both were integrated into mathematics, communication, and blueprint reading programs that were offered to adult students at four locations. Students also received extensive assessment of their functional academic skills by using instruments linked to job placement. The academic, training, and participatory variables of the school-age and adult school-to-work populations were researched, and a preliminary checklist of "work ethic" skills to supplement indicators of academic and intellectual ability was compiled. The following elements of school-age tech prep and school-to-work transition projects were identified as suitable for implementation into ABLE programs: career pathways; nontraditional employment; job-focused assessment; and use of applied academic materials. (Appendixes constituting approximately 80% of this document contain the following: CORD Bridge curriculum; CORD and AIT curriculum information; selected career pathways; sample partnership document, individual assessment report format, work ethic checklist, and school-to-work transition plan; and directory of tech prep and school-to-work providers.) (MN)

ED 403 396

FINAL REPORT

Title: **Adult Education School-to-Work Project**

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Tech Prep, and School-to-Work projects,
Northwest Tri-County Intermediate Unit

Fiscal Year: 1995-96

Grantee: Northwest Tri-County Intermediate Unit

Project Director: Richard C. Gacka Ed.D. Director: Management Services,
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Project Amount (federal): ~~$20,000~~ $34,400
Project (contract) Number: ~~002-6003~~ 98-6012

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ABSTRACT PAGE

Title: Adult Education School-to-Work Project
Project No.: ~~002-6003-~~98 - 6012
Funding: ~~$20,000~~ 34400
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Purpose: The project attempted to integrate elements of an existing Tech Prep project and a newly funded school age School-to-Work Transition project with traditional adult education programs funded through the Pennsylvania Dept. of Education, Bureau of Adult Basic and Literacy Education (PDE ABLE).

Procedure: Several elements of an existing Tech Prep project and newly funded school age School-to-Work Transition project were identified as possibly having value for replication within programs funded to serve adult students. Some of the elements identified in the initial proposal were not found to be viable for application to an adult population (i.e. career pathways), however other components were deemed to be viable and were included in the project. These elements included non-traditional (at least from the perspective of the educational community) employment, job focused assessment, use of applied academic materials and provision of curriculum content not traditionally considered germane to ABLE funded programs. Efforts targeted 1) the identification of adults not considered to be work ready but not currently served by ABLE programs, 2) identification of curriculum materials appropriate to work readiness needs, and 3) the integration of existing ABLE and school age funding streams.

Summary of Findings: The term "School-to-Work" is a very encompassing "umbrella" in terms of the specific services which might be viewed as appropriate for inclusion. As a result of activities carried out under this project it became clear that elements of the school aged School-to-Work transition projects such as Dept. of Labor referenced assessment, applied academics, and program articulation had applicability for adult education. However, it was equally clear that other components such as long range career pathways were not immediately applicable to ABLE funded adult education programs, and likely would not be applicable in the future without significant changes in agency organizational, curricular, philosophical, and administrative structures. Instructional intervention in the area of mathematics resulted in much greater improvement than intervention in the areas of communication skills, although many elements of the research model suggest that extreme caution in the interpretation of test findings would be in order. This report would be of greatest interest to project administrators.

Comments: With the announcement of possible PDE funding through the newly acquired federal School-to-Work grant, "School-to-Work" funding frequently was viewed as a pot of new money available to programs to offset ever tightening budgetary restrictions. With S-T-W's emphasis on inter-departmental cooperation, everyone was scrambling to see how they could become a player in this new ball game. To the credit of PDE ABLE, funds were allocated to explore the possible role of ABLE in implementing the significant reform which is at the heart of the S-T-W movement. Clearly, ABLE has a possible role but it will require a new vision on the part of much of the existing Literacy, ABE, and GED establishment. Definition of S-T-W and its component parts and ongoing integration of the project with the evolution of the school age S-T-W programs emerged as revised project objectives.

Products: None

Descriptors:

Introduction

Purpose/Objectives

The main purpose of this project was to evaluate the viability of integrating components of school age Tech Prep and School-to-Work projects into adult basic education programs.

Background

During the 95-96 school year the Pennsylvania Department of Education was notified of the funding for its federal School-to-Work grant application. A key component of the approved proposal was the integration of services currently provided through the Departments of Labor and Industry, Commerce, and Education. As a result, almost all government projects funded under those departments began to investigate their possible role in the newly established School-to-Work project. PDE ABLE, like other governmental agencies, attempted to identify its role in this new funding stream.

Since the 91-92 school year the Pennsylvania Department of Education has funded Tech Prep projects. In many ways these projects laid the conceptual groundwork for the school-based component of the newly funded S-T-W projects. Key components developed under Tech Prep including career pathways, applied academics, articulation agreements, integrated-thematic instruction, technology education, etc. appeared to have potential application for adult education programming.

Also during the 95-96 school year, legislative efforts toward programmatic consolidation moved forward culminating in the proposed Careers Bill which would have consolidated funding of a myriad of job training and vocational programs, including Adult Education, Tech Prep, and at one point School-to Work. At the state level movement toward a consolodated "Workforce Development" agency were observed.

The author of this Sec. 353 project has held the position of Tech Prep Project Director since the 92-93 school year and was the principal author of four separate School-to-Work project applications to PDE, all of which were approved for implementation during the initial funding cycle. The Tech Prep and School-to-Work programs served a three county region in Northwestern Pennsylvania including seventeen school districts and five Area Vocational Technical Schools (AVTS). The author also had been director of adult education programs (literacy through GED) since approximately 1975.

Rationale

The overlap and inter-relatedness of the Adult Education, Tech Prep, and S-T-W projects, and the benefits of not only inter-departmental integration but inter-program integration, was obvious. Based on the "cross-programmatic" responsibilities of the author, the following key points emerged in the development of the Sec. 353 ABLE Adult School-to-Work project.

1. Ongoing academic and intellectual testing of applicants to the Regional Occupational Skill Center, an adult technical school, showed significant pervasive academic deficiencies in individuals applying for admission. Almost universally these adults were receiving no academic instruction to address their deficiencies.
2. Implementation of curriculum materials developed by CORD and AIT and promoted under the term "applied academics" in the school age Tech Prep project, appeared to be having positive impact on academic achievement in the school age populations where they were utilized.
3. The pragmatic nature of "articulation agreements," written pseudo-contracts between secondary and post-secondary agencies, appeared to have motivational value for students.
4. Dialogue with employers conducted as part of the mandated STW Partnerships clearly indicated that the possession of academic skills, while important, was not the principal concern. "Work Ethic" behaviors were reported by employers as being equally deficient.

Monitoring of student enrollments in traditional adult education classes showed continuation of the chronic patterns of frequent early termination, lack of direct relevance of materials utilized to employment, and existence of concurrent behavioral deficiencies in a large portion of the population being served.

Questions

With the preceding points in mind, the following main questions emerged:

- Is there a potential population of adults for which a different type of adult basic education services would be appropriate?
- Would "applied" curriculum materials such as that used in school aged Tech Prep programs have viability in adult basic education instruction?
- Would it be possible to identify the "work ethic" skills identified as problematic by employers and to integrate instruction in those areas into an adult School-to-Work training program?

As the main questions were explored, the following sub-questions relative to School-to-Work emerged.

- Would it be possible to link ABLE funded programming with existing adult technical preparation programs?
- What are the characteristics of the academic deficiencies which exist in the pre-training population?

Time Frame

The activities funded in this project were carried out during the period July 1, 1995 through June 30, 1996. The specific dates of the academic programs which were operated are cited in the body of the report.

Key Personnel

The following personnel were involved in this project.

Project Director: Dr. Richard Gacka. Activities included project design, integration of activities with the Erie Area and Warren County School-to-Work Local Partnerships, curriculum design, interpretation of client assessment, statistical analyses, proposal development, and final report development.

Instructional Coordinator: Mr. Dale Meyer. Activities included identification and coordination of instructional personnel, test administration and classroom instruction.

Assessment Coordinator: Ms. Bootsie Barbour. Activities included scheduling and administration of testing, test scoring, and general program assistance.

Instructors:

- Kevin Holland
- Lynda Marsh
- Marie Whipple
- Amy Fry
- Gene Smith
- Deanne Passmore

Intended Audience

This project will likely be of greatest interest to program administrators who wish to become familiar with programs titled "School-to-Work" and/or who wish to identify the ways in which adult education can appropriately interface with those programs. Administrative staff may also be interested in the assessment results as they appear to have significant implications for program expansion.

Instructional personnel may find the curriculum materials of value as well as the discussion of "work ethic" curriculum development. Previous presentations by the author have consistently resulted in feedback from attendees that the issue of motivation is a chronic problem in the traditional adult education population and the emergence of the work ethic curriculum may have relevance in that area.

Dissemination

This project report will be disseminated to the:

Bureau of Adult Basic and Literacy Education
Pennsylvania Department of Education
333 Market Street
Harrisburg, PA 17126

AdvancE
333 Market Street
Harrisburg, PA 17126

Western Pennsylvania Adult Literacy Resource Center
5347 William Flynn Highway, Rt.8
Gibsonia, PA 15044-9644

Discussion

A. Statement of the problem

Within the past year specific federal funding under the School-to-Work Transition Act became available in Pennsylvania. The state proposal included specific language mandating inter-agency coordination of the Departments of Education, Labor and Industry, and Commerce. The Bureau of Adult Basic and Literacy Education, within the Department of Education, was included under the mandate for inter-agency coordination.

The Northwest Tri-County Intermediate Unit had for several years operated a regional Tech Prep program. In addition it had been successful in its application for several PDE School-to-Work Planning grants. Several key elements of the Tech Prep project were included in the S-T-W proposal, but they appeared also to have possible application to an adult population. Specific provisions which appeared to have relevance included applied academics, vocationally focused assessment, articulation agreements, career pathways, and work-based instruction. The Intermediate Unit also had operated PDE funded Adult Basic Education classes for several years.

The main purpose of this project was to evaluate the viability of integrating components of the School-to-Work project into adult education programs. As the project was implemented objectives were revised (see notes below) due to the fact that some of the original objectives were not viable for implementation with an adult population.

B. Goals and Objectives

All goals are related to Priority A9, "develop a model that meets the objectives of the School-to-Work Opportunities Initiative."

Goal 1. To integrate PDE funded ABLE school to work with currently PDE funded Tech Prep, Youth Apprenticeship, and forthcoming school-to-work projects.

A. Expand the concept of "career pathways" to include an adult population of ABLE funded students at two technical training facilities.

B. Expand the concept of "skill checklists" to an adult population of ABLE funded students at two technical training facilities.

C. Expand the concept of "student portfolios" to an adult population of ABLE funded students at two technical training facilities.

Notes: The main objective of integrating the school age Tech Prep and school aged school-to-work projects with an adult School-to-Work project was maintained and implemented successfully. However, sub-objectives were modified because of the part time enrollment pattern which permeates almost all local ABLE funded programming. A full time model, the CORD Bridge program was reviewed (see appendix A), but replication was not viable due to the long term intensive scheduling inherent in that model. The goal pertaining to skill checklists was maintained but integrated with another goal and implemented only in the area of "work ethic" skills. Compilation of student portfolios is scheduled for the 96-97 school year when the adult education project is implemented as a "pre-admission" prerequisite for local adult technical skill admissions and provided as a component of a "job finders club" at the Erie Job Center.

Goal 2. To utilize CORD (Center for Occupational Research and Development) developed applied academics curriculum materials with a ABLE funded Adult Education Program.

A. Evaluate and utilize the appropriate elements of Applied Mathematics, Applied Communications, and Principles of Technology in classes offered at two adult technical facilities.

B. If appropriate, evaluate and utilize the CORD remedial Adult Education curriculum materials.

Notes: This objective was implemented utilizing independently developed mathematics curriculum, selected modules of the CORD Applied Mathematics course and selected modules of the AIT Applied Communication curriculum. AIT is a second major national publisher of "applied" curriculum. The latter was done because the entire curriculum represents a full year program of studies, far in excess of the time allocated for the adult S-T-W project. One math program utilized in the project was developed in conjunction with the regional adult technical school as well as local employers. The second math program utilized units of the CORD Applied Mathematics curriculum (see Appendix B).

Goal 3. To make available to adult students all of the career guidance and career pathway materials available to school age students enrolling in approved Tech Prep associate degree programs.

A. To provide access to career guidance and career exploration materials .

B. To provide each adult client with formal career assessment and counseling services adequatefor the development of an individual career plan.

C. To develop and have available for students at two sites, a comprehensive career library.

Notes: Goal 3 was not implemented. The nature of the part time instruction did not permit the repeated contacts inherent in career pathway development. In addition, the short duration part time nature of adult schooling does not lend itself to the "career pathway" approach which relies heavily on the completion of a long term designated sequence of credit bearing classes. Traditional ABLE programming will need to address a "competency based" approach rather than a "course completion" approach to career planning. Copies of the Career Pathway Guide and course sequences developed by the school age Tech Prep project in conjunction with Edinboro University and Penn State University are included in Appendix C. The textual components of the generic guide could be modified to have relevance for adult course planning.

Goal 4. To provide students with assessment of functional academic skills using instruments linked to job placement and the Dept. of Labor GED classification system.

A. To complete assessment of reading, quantitative and intellectual abilities.

B. To develop individual reports and interpretation sessions for each student, linking the sessions with career planning.

Notes: This objective was implemented to the extent that all students were assessed and individual profiles developed. Linking with career pathways was not achieved.

Goal 5. To conduct research on the academic characteristics of both the school age school-to-work and the adult school-to-work populations.

A. Complete a formal written study on the academic and intellectual characteristics of adult and school-age students.

B. To expand the local norms dealing with academic levels of students attending regional programs.

C. To continue to participate with the Wonderlic Company on the development of statistical norms for the WBST.

Notes: This objective was fully implemented.

The following objective was added to the original proposal:

Goal 6. To research and develop a preliminary checklist of "work ethic" skills which could be utilized to supplement the indicators of academic and intellectual ability.

Notes: One consistent theme that arose during all discussions with employers was the premise that individuals seeking employment showed significant deficiencies in the areas of basic attitude and "work ethic." Employers consistently noted that characteristics such as poor attendance, lack of personal responsibility, inability to adjust to the discipline of the workplace, etc. were the primary barriers to employability. Thus, it was clear that the original inclusion of only academic instruction, failed to address a primary reason for failure of the individual to move smoothly from school (training) to work. The fact that the instructional setting could also serve as a testing and/or training ground for work related behaviors led the author to include development of a behavioral checklist as a component of this project.

C. Procedures

The following procedures were employed to address the goals specified above.

Goal 1. To integrate PDE funded ABLE school to work with PDE funded Tech Prep, Youth Apprenticeship, and forthcoming school-to-work projects.

- The project director concurrently functioned as Director of the Tri-County Tech Prep project and acted as primary liaison with the Erie Area, Crawford County, and Warren County School-to-work Local Partnerships.
- Personnel from the Adult S-T-W project were involved in implementation of specific components of the Tech Prep and S-T-W projects listed above. Specifically, project participants included:

    Mr. Michael Hampsey, Director of the Warren Career Center and member of the Warren School to Work Partnership arranged for all classes in the Warren area, coordinated student testing, and observed class presentations

    Ms. Bootsie Barbour, Coordinator of the NW Regional Staff Development Center, participated in Tech Prep meetings, conducted testing of Tech Prep students, attended PDE workshops, is scheduled to coordinate the S-T-W "Powersource" guidance program, and is a member of the Erie Area S-T-W Local Partnership.

Mr. Dale Meyer, Instructor in this project, functioned as the Coordinator of Youth Apprenticeship programs and the Teacher in the Workplace program.

- A request for funding of a second year of adult School-to-Work activities has been acted upon favorably by PDE ABLE and activities will build upon the initial work performed during the 95-96 year. Specific FY 96-97 program activities will include:
  1. Pre-admission programming at the Regional Occupational Skill Center is planned to begin in January '97.
  2. Establishment of a "Job Finders Club" is scheduled to begin at the Erie Job Center for January '97.
  3. Continuation of "applied" coursework for adults has been requested to begin in October at the Warren Career Center.

- The Erie Area S-T-W project (school age) has been notified by PDE of funding as a "development" grant for FY 96-97. The project completed organizational work and has implemented an employer driven "RFP process" for the funding of specific activities. Under this format the adult education community is now eligible for local STW funding (see Appendix D).

- Several of the Erie Area S-T-W Partnership committees address areas of mutual concern with adult educators. Committees that would be of relevance to adult educators include:

  Curriculum Reform Committee
  Work Skills Identification Committee
  Special Needs Transitioning Committee

- The test battery which had been used for three years with the Tech Prep project was also used with the adult school to work participants. This facilitated comparisons between various school aged groups, and various adult groups, including the STW grant population.

Goal 2. To utilize CORD (Center for Occupational Research and Development) developed Applied Academics curriculum materials into a ABLE funded Adult Education Program.

"Applied" curriculum materials published by CORD and AIT are widely utilized within the school districts which are served by the local Tech Prep consortium and were available for review through the Tech Prep resource library. The CORD Applied Mathematics curriculum and the AIT Applied Communication curriculum were reviewed. The CORD Principles of Technology, an applied Physics (Principles of Technology) program were not reviewed because they were not considered viable for inclusion under the part time model that was planned. Both the CORD Applied Mathematics and AIT Applied Communications curricula were designed for presentation across a full school year, or they can be presented in a sequence which covers two years.

The curriculum materials were reviewed by personnel who would be providing the instructional component of the project, administrators of local technical training programs, and local employers. The consensus was that selected elements of the AIT Applied Communications and CORD Applied Mathemeatics curriculum could be utilized and that a customized mathematics curriculum would also be developed. The following reflect the syllabi for the courses provided during the program.

Workplace Communications

30 Hour Syllabus

Modules from AIT Applied Communications

Week 1- Communicating in the workplace

Week 2- Communicating in the workplace cont.

Week 3- Using problem solving strategies

Week 4- Using problem solving strategies cont.

Week 5- Participating in groups

Week 6- Participating in groups continued

Week 7- Following and giving directions

Week 8- Following and giving directions continued

Week 9- Communicating to solve interpersonal conflicts

Week10-Communicating to solve interpersonal conflicts continued

Session should be 3 hours per x 10 session = 30 hours

Note: This course is applicable to any and all adults that want a better understanding of effective workplace communication techniques.

Instructor: AE-STW Intermediate Unit staff member

Basic Blueprint Reading

Course Syllabus

16 hours

1. Title Blocks, Line and Symbols and Orthographic Projections
2. One, Two and Three View Drawings and Auxiliary Views
3. Application of Dimensions and Tolerances and Section Views
4. C'sinks, C'bores, Fillets and Rounds
5. Drilling and Tapping Representation and Theory
6. Screw Thread Specifications and Machining Symbols

Expected Outcome:

Upon completion of this section, students will become proficient in the basics of blueprint reading which will build a foundation for more intricate drawing interpretation. Also, the class is meant to be relevant to the customers needs by questioning why certain dimensions must be there and what effect that has on machining and methods. It should be noted that company specific drawings need to be incorporated into this module to show as much relevance to application as possible.

Shop Trigonometry

20 Hour Syllabus

- 1. Introduction to Trigonometry
  distance between two points and the Cartesian coordinate system
- 2. Trigonometry
  the Pythagorean formula
- 3. Trigonometry continued
  the sine , cosine, and tangent functions
- 4. Trigonometry continued
  the sine, cosine, and tangent functions cont.
- 5. Trigonometry continued
  use of the calculator to operate the trig functions
- 6. Trigonometry continued
  degrees in decimal vs. DMS , radians vs. degrees and π (pi)
- 7. Trigonometry continued
  working problems out using trigonometry
- 8. Trigonometry continued
  the law of sines and the law of cosines
- 9. Trigonometry continued
  a compound angle problem and analysis
- 10. Review and final comments
  review of material presented in class certificates of completion

Note:

This class is intended for adults that have a solid foundation in basic algebra and geometry and want to attain the necessary trigonometry skills that are commonly used in manufacturing settings. The emphasis will be on right angle trig applications and how trig is used in the interpretation of geometric dimensioning and tolerancing.

Instructor ...............I.U. Adult Ed. School-to-Work Staff

Outcome Expectancies

Upon successful completion of the 20 hour program, adults will have a thorough understanding of how to use trigonometry to solve common machine and inspection situations that require concrete assurance of trig functions. Expected outcome is the interpretation and application of the following:

- Pythagorean theorem
- Tangent function
- Use of calculator
- Formula manipulation
- Law of cosines
- Sine and cosine functions
- Radius, radians, and hypotenuse
- Right angle trigonometry
- Law of sines
- Compound angle calculation

Course should be 4 weeks x 2 (2-hour) sessions/week = 16 hours

Instructor for Class ....AE-STW Intermediate Unit Staff

Introduction to Statistical Process Control

20 hour Syllabus

- **1.** Statistical Process Control
  Introduction to working with statistics
- **2.** Statistics
  Measuring central tendency
- **3.** Statistics
  Calculating a mean and a standard deviation
- **4.** Statistics
  Working with data
- **5.** Statistics
  Data distribution and analysis
- **6.** Quality Assurance
  Specifications vs. process capability
- **7.** Quality Assurance
  Using a control chart
- **8.** Quality Assurance
  Creating and interpreting a control chart
- **9.** Quality Assurance
  Design and using a sampling plan
- **10.** Quality Assurance and Process Control- Review

Expected Outcome

Upon completion of the 20 hour program, students will gain a better understanding of the foundation skills needed to implement statistical process control charting. Emphasis will be with the math involved in SPC charting and relevant examples that will guide students through an actual run chart based on in-class data.

Instructor................ AE-STW Intermediate Unit Staff

The following classes were provided as part of this grant. The program was made up of: 1) initial testing, 2) classroom instruction using the preceding syllabi, and 3) post testing.

Site	Curriculum Area	Instructor	Date Started	Enroll	End Date
Skill Center	Tech Math	J. Turko	1/15/96	2	4/17/96
Skill Center	Tech Math	K. Holland	1/15/96	4	4/17/96
Skill Center	Comm.	L. Marsh	2/6/96	10	5/6/96
NIFM	Tech Math	D. Meyer	1/16/96	13	3/20/96
Northeast	Math/BPrint	D. Meyer	1/22/96	10	3/25/96
Northeast	Math/BPrint	G. Smith	1/25/96	11	3/28/96
Warren AVTS	Comm.	M. Whipple	1/9/96	16	3/26/96
Warren AVTS	Comm.	M. Whipple	1/11/96	9	3/28/96
Warren AVTS	Comm.	M. Whipple	1/29/96	12	4/15/96
Warren AVTS	Tech Math	A. Fry	2/28/96	8	4/15/96
Total				**95**	

The definition of "Foundation skills" varies considerably between the educational and private sector communities. While educators typically define "foundation" as basic reading or mathematics (this is particularly true of the ABE and Literacy communities), the private sector defines "foundation" as reflecting a much higher academic level, in some cases inclusive of skills in basic algebra, geometry, and higher level technical reading. Discussions with employers show little interest on their part in the traditional literacy level of training. However, testing results consistently suggest the existance of individuals functioning at that level, within the employed population. In one case the employer had plans for staff training in statistical process control while test results indicated a number of employees who were below a elementary level in their reading and math scores. This is a particularly "gray area" in that the roles of ABE providers, remedial post secondary providers (i.e. JTPA), and post-secondary institutions (i.e. community colleges) overlap considerably. Movement toward consolodated funding under the umbrella of "workforce development" will likely accelerate the need to articulate roles.

Selected units of the CORD Applied Math and the AIT Applied Communication were found to be applicable to use with an adult populaiton. The Applied Math Curriculum appeared to have value in that it reflected a break from the traditional "workbook" approach to math instruction. The AIT Applied Communication program appeared to have value in terms of the relevance of the content to the kinds of activities which employers determined that employees must engage in. In effect, employers indicated that it was a curriculum that was very relevant to their needs. This reflects a departure from the typical ABE -GED curriculum and suggests that PDE ABLE program directors should become familiar with curriculum materials outside the realm of the traditional ABE/GED publishers.

Goal 4. To provide students with assessment of functional academic skills using instruments linked to job placement and the Department of Labor GED classification system.

Extensive testing was completed. The test battery was the same as that used by the Intermediate Unit Adult Education program in the screening of applicants to the Regional Occupational Skill Center, students enrolled in local high school AVTS programs, and a range of adults engaged in some form of academic instruction. The test battery is also being utilized with local companies in the assessment of current employees.

Students engaged in this project were provided with an individual report. The composite report was maintained at the Intermediate Unit and utilized for statistical analyses.

The test battery utilized in assessing students in this project is outlined in detail in Appendix E.

Data was analyzed from two perspectives, the academic and intellectual characteristics of individuals participating in the Adult Education School-to-Work project and secondly an analysis of academic change as a result of the program. Because of the short length of some of the programs and a myriad of statistical issues underlying pre-post analysis caution in the interpretation of the latter is advised.

Appendix F contains a sample individual test report, a series of charts presenting test data for the entire population of students participating in the Adult Education School-to-Work project, charts showing the pre-post analysis conducted on test scores of participants, and charts showing the overall academic levels of all adults tested at the Regional Occupational Skill Center during 94-95 and 95-96. The following conclusions are derived from the testing data:

- Applied or "interpretative" skills, that is, the ability to use basic academic information or solve relevant problems is extremely deficient in the overall adult population. Generally, rote basic skills are satisfactory but applied skills are extremely deficient. It appears that adults have retained the ability to solve memorized or overt reading and math problems but cannot apply that knowledge in an unstructured problem solving setting.

- The population of adults selecting to attend work related training is quite diverse, with some individuals showing adequate mastery of basic skills. At the same time, a large portion of adults who display significant academic weakness, do not voluntarily enroll in remedial educational programs. Acceptance of their academic deficiencies or denial of responsibility for change keep many students from participating in needed basic education training programs.

- The academic skills of participants in the program showed varied degrees of change. This may be attributable to many factors and further investigation is needed. However, preliminary findings show that arithmetic skills may be particularly sensitive to improvement because of intensive remedial study.

Goal 5. To conduct research on the academic, training, and participatory variables of both the school age school-to-work population and the adult school-to-work population.

The determination of student characteristics parallels an ongoing assessment project being completed by the Tri-County Intermediate Unit. As part of that project applicants to the Regional Occupational Skill Center, Adult Basic Education, GED, and other programs are evaluated with tests of ability and achievement. This provides comparison populations in addition to the test standardization population. Charts based on the ongoing assessment are contained in Appendix G. As a result of this much broader assessment of adult skills the following results emerged.

- A large portion of the adult population which is pursuing post-secondary employment related studies (i.e. technical school enrollment) lacks basic prerequisite academic skills. This group is generally not affiliated with any type of 'remedial" adult program, i.e. JTPA, Economically Disadvantaged, etc.
- Math skills of this adult population are extremely deficient, showing general skill levels which peak at computation using fractions and decimals. This is well below the levels which are indicated as prerequisite for employment by employer partners of the Erie Area School -to-Work partnership.
- Generally, the population of adults pursuing admission to a technical training program shows much more deficient academic skills than a population of 12th grade students.

- Within the population of high school and AVTS students, there is a large percentage of students who lack academic skill levels equivalent to levels determined to be the minimum prerequisite for success in post secondary training by the Department of Labor. This suggests that it is possible to identify in advance those individuals who will show difficulties in later formal training. This has extreme relevance to ABLE funded programs in that it provides information for program and curriculum planning, i.e. immediate enrollment of graduates who do not possess adequate academic proficiency for employment.
- The AVTS population, because of a high concentration of special needs students presents a population of individuals who likely will need the services of a PDE ABLE adult remedial program.

Dialogue is also continuing with the test publisher per the proposal objective. This is being done in order to develop valid local norms and to accommodate variations in test administration such as utilization of calculators during test administration.

Goal 6. To research and develop a preliminary checklist of "work ethic" skills which could be utilized to supplement the indicators of academic and intellectual ability

Because of the almost universal inclusion of "work ethic" instruction as a prerequisite of adult educational training, the project undertook a review of existing materials which would have viability in the monitoring of adult student proficiencies in this area. Several references were addressed and ideas were derived from a myriad of sources. The end result was the development of a "work readiness skills" checklist that could be used to monitor the attitudes and behavior of students. A copy of the skills checklists developed for the Regional Skill Center are contained in Appendix H.

Positive Results: Goals Met:

Goal 1. To integrate PDE funded ABLE school to work with PDE currently funded Tech Prep, Youth Apprenticeship, and forthcoming school-to-work projects.

Goal 2. To utilize CORD (Center for Occupational Research and Development) developed Applied Academics curriculum materials into a ABLE funded Adult Education Program.

Goal 4. To provide students with assessment of functional academic skills using instruments linked to job placement and the Dept. of Labor GED classification system.

Goal 5. To conduct research on the academic, training, and participatory variables of both the school age school-to-work population and the adult school-to-work population

Goal 6. To research and develop a preliminary checklist of "work ethic" skills which could be utilized to supplement the indicators of academic and intellectual ability

Negative Results: Goals which were not met.

Goal 3. To make available to adult students all of the career guidance and career pathway materials available to school age students enrolling in approved Tech Prep Associate Degree programs.

Evaluation Instrument/Results

The Wonderlic Basic Skills Test was administered (Apprendix E). This test battery is the same set that has been used by the Intermediate Unit Adult Education program in the screening of applicants to the Regional Occupational Skill Center, students enrolled in local high school AVTS programs, and a range of adults engaged in some form of academic instruction.

Data was analyzed from two perspectives, the academic and intellectual characteristics of individuals participating in the Adult Education School-to-Work project, and secondly an analysis of academic change as a result of the program. Improvement in student scores in the area of math was observed, but no significant change in reading scores was noted. However, because of the short length of some of the programs and a myriad of statistical issues underlying pre-post analysis, caution in the interpretation is advised. Individual test results were provided to the students and graphical summaries are presented in this report in Appendix F.

Procedure for Dissemination

This project report will be disseminated to:

Bureau of Adult Basic and Literacy Education
Pennsylvania Department of Education
333 Market Street
Harrisburg, PA 17126

AdvancE
333 Market Street
Harrisburg, PA 17126

Western Pennsylvania Adult Literacy Resource Center
5347 William Flynn Highway, Rt.8
Gibsonia, PA 15044-9644

The director was requested by PDE ABLE personnel to make a formal presentation on the Adult Education School-to-Work project at the statewide Private Industry Council conference. A copy of the Powerpoint notes used in that presentation are contained in Appendix I.

Discussion, Conclusions and Recommendations

Execution of this project proved to be very interesting in that it highlighted the differences in two educational worlds, that of school age "School-to-Work" and the world of "adult literacy." Directing grants funded through both entities, this project provided an opportunity to try ideas from the emerging school age School-to-Work model within the traditional adult education arena. Permiating the whole discussion is the issue of funding driven programming, that is, the emergence of programmatic expertese based on funding availability. Several basic questions summarize the intent and outcomes of this project:

- What is this thing called School-to-Work?
- Is there a role in School-to-Work for adult basic education funded programs?
- If elements of the school age "school-to-work" model are applied to an adult population, what works and what dosen't?

What is this thing called School-to-Work?

School-to-Work refers to a variety of school reform activities that are targeted toward achieving systemic public school reform. It is structured to be viable in a somewhat traditional "8 to 4 classroom based environment." Many elements would not be viable in a traditional part time academic based adult education program. This raises the question of the adequacy (in terms of the intensity of contact) of the part time model which is extremely prevalent in the majority of existing PDE ABLE programs.

Appendix J contains the School-to-Work Transition Plan upon which the regional Tech Prep and the more recent School-to-Work school age projects were built. Those readers who wish to "get up to speed" in the area of school-to-work are strongly advised to carefully read the document. The point of the plan is to highlight all of the inter-related activities which are included under the S-T-W umbrella. Just a few include career counseling, career pathways, articulation agreements, applied academics, technology education, work-based learning, linking activities, and competency assessment. Many of these reflect practices which are quite different from what currently takes place in adult education classes.

The reader is also directed to the School-to-Work home page on the Internet (www.stw.ed.gov) a "one stop" source of information about STW program implementation:

For students who are in their formative years, the concept of school leading to work makes clear common sense. For an adult population the issue is more complex, much of what is done in traditional adult education is not targeted toward preparing individuals for work and frequently enrollment is so "part time" that it hardly could be considered coherent "schooling." Lastly, how do all of the individuals who are already employed but need the types of instruction promoted under the S-T-W fit into the model? Many items that are promoted under the STW model do not fit into traditional adult education models because of the difference in "degree of control" over the respective population which the provider might possess. The line between "adult school-to-work" and "workplace literacy" is also very blurred. Testing data indicates that both the sub-population of unemployed individuals and the sub-population of low skilled but employed population have significant basic education needs. The line between economic development and education is also becomming less distinguishable. A clear theme of the S-T-W mandated "partnership" and "compact" is the idea of cross-departmental programming. While this is articulated, it is far from being implemented. When considering the appropriateness of agency funding the sequence of decsion making should be:

1. What skills are needed?
2. What skills do the adults possess?
3. How best can the needed skills be developed?
4. Who best can provide the training needed to develop the skills?
5. Who most appropriately should pay for the training?

Unfortunately the problems of "turf,", "power" and "control" come into play just as they do in any reform effort.

Is there a role in School-to-Work for adult basic education funded programs?

The data obtained from the testing of a wide range of adults, (as part of this project and others) shows irrefutable evidence that a large percentage of non-affiliated adults (those who are not enrolled in any type of ABE program) display academic needs which would make them appropriate candidates for ABE enrollment or service. In effect, there is a large unserved population of adults who are in need of basic educational programming. This group shows academic need relative to the prerequisite skills of the entry technician level employee. To a large degree their "academic need" is relative to the increasingly demanding nature of entry level employment. Fewer and fewer jobs are classified as unskilled, and many current employees are being asked to perform a broader scope of tasks in order to maintain employment. There are economic forces at work which are fostering the existance of a large populatio of individuals who will require academic retraining prerequisite to technical retraining.

However, the "prerequisites" alluded to are specific and technical, two characteristics which make them different from the generic undifferentiated "remediation" frequently found in ABE classes. Employers are looking for basic skill training but are not particularly interested in open-ended non specific training. From the perspective of employers there is an increasing awareness of the need for adult basic academic training and a void in terms of its availability. Who will fill the void is not determined, but surely many entities will attempt to position themselves to be the provider. The decision as to who best could provide the service should likely be a local option based on the track record of identified personnel.

If elements of school age "school-to-work" are applied to an adult population, what works and what dosen't?

Changing school curriculum from sterile lecture based instruction to practical "hands on" relevant learning is a kernal issue in the S-T-W movement. Unfortunately, like school age instruction, many adult education programs reflect workbook based or lecture based approaches to instruction. "Applied academics" suggests relevant participatory work learning built around some theme or project. The approach would be appropriate in adult education classes. A consistent complaint heard from employers is the lack of "marketable skills" of job applicants. The content of instruction needs to work backwards starting with a clear definition of skill prerequisites and then identification of effective ways to develop those skills. There are many components of the Tech Prep applied academics curriculum that would be beneficial to incorporate in ABLE funded programming. The trend toward large commercial publishers adopting "applied" methodology suggests that it may be more available to adult educators. What is sometimes missed is the fact that "applied" reflects as much an approach than a specific material and that similar teaching can be incorporated into instruction with a minimum of new material, provided that the instructor has the creativity and will to do so.

To a large degree the predominance of "part time" adult education programming may prove to be a major obstacle to effective school to work programming. Any honest effort to develop the skills required in the workplace will require the individual to attend training with greater intensity than is currently fiscally viable in most ABE programs. An adult who is seriously deficient in basic academic skills will not likely make adequate progress through part time attendance. This however is not a simple issue. Many adults who are in need of programming also are primary bread earners or have domestic responsibilities which preclude full time attendance. Research into the efficiency of various enrollment models may be of some benefit, i.e. would applied teaching strategies and job relevant content result in greater gains over a shorter period of enrollment?

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The data obtained in this study suggests that mathematical skills are more responsive to review and training than is reading ability. Two instructional approaches were attempted, both of which were highly applied and linked to employment. Reading skills were not as responsive to intervention. However, such assessment is particularly difficult in a S-T-W environment because frequently the only assessment devices available are very generic while the training requested by the employer is very specific. While gains on the designated pre-post instrument were not evident, the employer of individuals completing the AIT Applied Communication modules was positive about the results of instruction.

Career pathways are six year course sequence plans that are designed to guarantee that all prerequisites to employment are addressed. Such a long term approach is not viable with an adult population but could be modified to include the sequential completion of modules or competencies. The clear definination of activity sequences would have merit given the open ended nature of current adult education programming.

Articulation agreements are pseudo-contracts between a secondary school and a post-secondary institution. Again, this is not viable with an adult population but a variation in the form of an articulation agreement between an ABE program and a employer could certainly be developed.

Work based experiences play a large role in the school to work effort. To some degree this would be much easier with an adult population since many are already employed. The essence of having work based experiences is that students experience relevance of academic knowledge. Since many adults are already employed, the deficiency would apppear to be on the part of the ABE program in not making the instruction linked with what is required in employment.

Recommendations

Adult education providers who are interested in becoming involved in school-to-work should:

1. Contact the Tech Prep Consortium nearest to you and obtain background information about that project. This will be an excellent introduction to career pathways and articulation agreements (see Appendix K).
2. Contact the School-to-Work Local Partnership serving their area and become active in the committee addressing the requirement that "all students" receive services (see Appendix K).
3. Become familiar with the various "occupationial standards" projects which are currently being funded or obtain copies of local company pre-employment academic tests. Internet contacts such as the national skills standards project, http://steps.atsi.edu , would be of assistance.
4. Identify local technical training providers with whom an adult education provider could link.
5. Conduct a self analysis relative to the agency's potential to provide the specific technical training required.
6. Obtain objective test data on the skill levels of adults in the area.
7. Attend state and national conferences dealing with the school age STW programs. This information should be available through your local funded project.

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B. CORD and AIT Curriculum information
C. Tri-County Career Pathway Guide
   Penn State Behrend Career Pathway
   Edinboro University Career Pathway
D. Erie Area School to Work Local Partnership RFP docuement
E. Wonderlic Test Battery Information
F. Assessment Individual Report Format
   Adult Education STW participant charts
   Regional Skill Center participant charts
G. Adult WBST charts
   School Age WBST charts
H. Work Ethic Checklists
I. Presentation Notes to Private Industry Council Conference
J. Tri County School to Work Transition Plan
K. Directory of Tech Prep & School-to-Work Providers

CORD BRIDGE PROGRAM

TECH
BRIDGE
PREP

BRIDGING THE GAP

TECH PREP

FOR ADULT STUDENTS

Good jobs increasingly depend on people who can put knowledge to work. In today's workplace, workers are required to have advanced technical skills and the ability to understand complex theories, processes, and technical concepts in rapidly changing technologies. Unfortunately, many workers do not possess such skills and face the bleak prospects of dead-end work, unemployment, or limited options for future employment unless they pursue continued education.

Upon seeking acceptance to two-year postsecondary schools, many of today's adult students are finding themselves inadequately prepared for success within a formal education environment because they lack the fundamental academic skills to complete a technology-oriented postsecondary curriculum. The advent of high school Tech Prep curricula provides postsecondary educators valuable tools to employ in preparing adult students to enter one-year certificate and two-year degree programs. Tech Prep programs offer a sequence of study which prepares students for high-skill occupations by integrating academic and occupational subjects.

Tech Prep Bridge has become the icon denoting Tech Prep curriculum for adults—coursework that gives adult students a foundation of technical knowledge and skills needed to enter and successfully complete postsecondary curriculum.

BRIDGE *PROGRAMS*

Tech Prep Bridge uses a technical "systems" approach in preparing students for degree programs. Bridge programs incorporate applied academics coursework, giving students the solid foundation of math, physics, biology, chemistry, and communication skills necessary to successfully complete technology-oriented postsecondary curricula. The combination of Bridge coursework, education/training materials, and hands-on learning activities provided through the program gives students positive learning experiences, enhances their self-confidence, and provides direction and assistance in selecting a specific certificate or degree program.

BRIDGE

Well-designed Bridge curricula have two primary goals to assist underprepared students in bridging the gap which separates them from particpation in postsecondary coursework:

1. ***Give students a blend of math, science, computer, and occupationally relevant knowledge and skills that facilitate successful completion of two-year postsecondary curriculum.***
2. ***Convey occupationally relevant knowledge and skills that serve as a foundation for lifelong learning processes mandated by high skill/high wage jobs.***

Because the knowledge and skills developed in Bridge curriculum are commonly used in a variety of technical occupations, the program helps orient students to the postsecondary learning environment while providing the basic skills they can use in future technical employment.

Through the Bridge program, students receive broad-based, multi-disciplined, applications-based training that is focused on technical principles and systems. Broad-based training is essential because evolving technology results in frequent modifications to knowledge and skills needed on the job. Multi-disciplined education/training enhances a student's ability to understand and work with contemporary processes and to adapt to future technological innovations.

To enhance the relationship of course concepts to job settings, Bridge programs incorporate: hands-on learning, team-learning processes, and attention to various student learning styles.

Tech Prep Bridge programs are:

• • • Interdisciplinary—providing knowledge and skills in areas such as electronics, mechanics, fluid power, thermal devices, and microcomputers;

• • • Broadly based—building on strong technical fundamentals that are essential to the acquisition of new knowledge and skills as technology and workplace requirements change; and

• • • Systems oriented—integrating knowledge of subunits within a process or device to deal effectively with the whole unit.

For many two-year postsecondary schools, preparatory programs have more participants than any other program. Compelling evidence of the need for Bridge curriculum is demonstrated by a combination of: the rapid pace of technological change in the workplace, the rising average age of students entering two-year postsecondary schools, and the large numbers of students unable to fully participate in one- and two-year postsecondary curricula because they do not meet minimum entry-level requirements.

BRIDGE *STUDENTS*

Unlike traditional postsecondary school students, many participants in Bridge programs have not previously experienced technical training. Many Bridge students are unsure of their ability to learn about technology. They commonly lack math skills and do not have a fundamental understanding of the science principles on which technology is based. The Bridge program is most applicable to participants who are experienced workers, have a minimum of an eighth-grade reading comprehension level, have the ability to solve general mathematics problems, and have an interest in technology.

Experience has shown that adult students are frequently "between employment." Bridge curriculum includes instruction that may function as a workplace skills development program and enables a student/worker to secure entry-level employment offering a level of compensation greater than minimum wage.

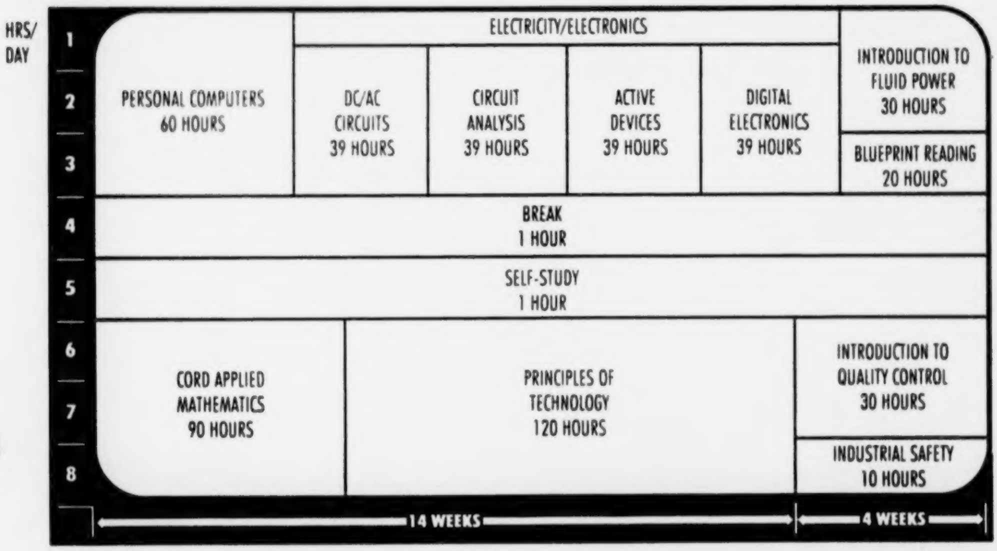
BRIDGE *CURRICULUM*

Tech Prep Bridge curriculum utilizes the combination of occupationally relevant training and applied academics courses which integrate subject matter with practical applications. Course content advances as students complete each phase of training, and the curriculum structure forms an integrated learning process. By design, the program is a rigorous, comprehensive curriculum that prepares students to complete formal postsecondary education in a technical field. Bridge curriculum can also enable a student to secure part-time employment while participating as a full-time student in a one-year certificate or two-year degree program.

A Tech Prep Bridge program's integrated training allows students to gain competencies and foundational abilities through an instructional delivery style that presents concepts within a workplace context. Program participants typically receive over 500 contact hours of technology-oriented instruction in 18 weeks.

BRIDGE *CURRICULUM MODEL*

(For curricula such as Engineering, Industrial, and Automotive Technologies)


HRS/ DAY
1
2
3
4
5
6
7
8
PERSONAL COMPUTERS 60 HOURS
ELECTRICITY/ELECTRONICS
DC/AC CIRCUITS 39 HOURS
CIRCUIT ANALYSIS 39 HOURS
ACTIVE DEVICES 39 HOURS
DIGITAL ELECTRONICS 39 HOURS
INTRODUCTION TO FLUID POWER 30 HOURS
BLUEPRINT READING 20 HOURS
BREAK 1 HOUR
SELF-STUDY 1 HOUR
CORD APPLIED MATHEMATICS 90 HOURS
PRINCIPLES OF TECHNOLOGY 120 HOURS
INTRODUCTION TO QUALITY CONTROL 30 HOURS
INDUSTRIAL SAFETY 10 HOURS
14 WEEKS
4 WEEKS

BRIDGE *NETWORK*

The Center for Occupational Research and Development (CORD) has worked with schools and education agencies at the state and federal levels to define and develop model Tech Prep programs. Through the National Tech Prep Network (NTPN), a professional organization dedicated to supporting Tech Prep initiatives, CORD offers a forum for exchanging ideas and improving approaches to Tech Prep.

Tech Prep Bridge practitioners have formed the Tech Prep Bridge Network, a focus group of NTPN, specifically dedicated to postsecondary members. The Bridge Network serves as a conduit for information exchange among its members. Timely solutions to implementation, program administration, counseling, funding, and recruitment challenges are just some of the types of valuable information the Network gathers and shares. To learn more about the network or about the Tech Prep Bridge Administration Guide, call 800-972-2766.

Established in 1991, NTPN assists members in planning, implementing, evaluating, and improving programs by maintaining a network of communication for new and existing members. Through national conferences, workshops, and publications, the Network provides assistance in identifying trends and innovations in Tech Prep and in solving issues that stem from the implementation of new programs. NTPN represents over 3,000 employers, secondary teachers, school administrators, postsecondary instructors, and state and local Tech Prep coordinators.

NATIONAL TechPrep NETWORK

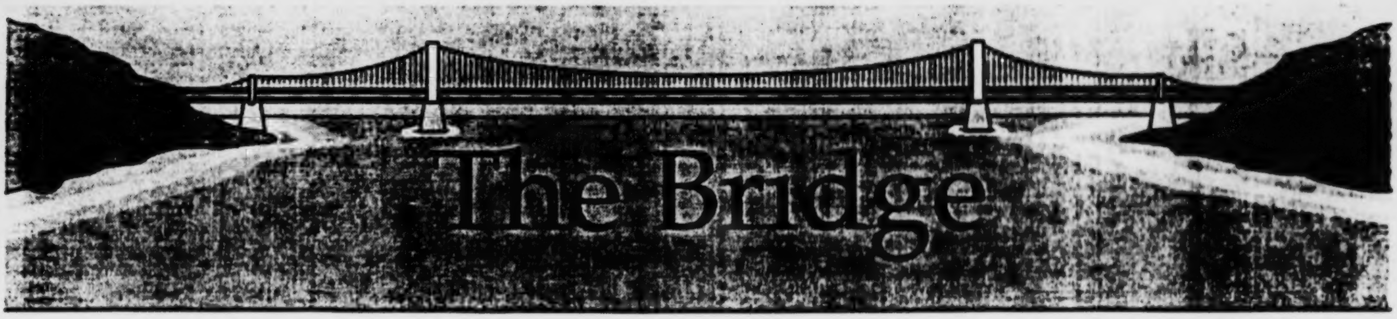
CENTER FOR OCCUPATIONAL RESEARCH AND DEVELOPMENT

The Center for Occupational Research and Development (CORD) is a non-profit public service organization dedicated to empowering the education enterprise with innovative networks, resources, and processes to equip learners with the academic foundation and flexible, technical skills that enable them to function successfully in the contemporary workplace.

CORD develops and disseminates research-driven forecasts, educational reform strategies, needs assessments, skill standards, and contextual academic curricula, with a primary focus in mathematics, science, and technology. By providing tools and services that empower the education enterprise to serve its learners more effectively, CORD contributes to lifelong learning and the preparation of a more productive and competitive global workforce.

Center for Occupational Research & Development
P.O. Box 21689 • Waco, Texas 76702-1689
Toll-free 800-972-2766 • Tel. 817-772-8756
FAX 817-772-8972

CORD



The Bridge

September 13, 1996

Advisory Committee Meeting

The Tech Prep Bridge/Transformations advisory committee met in Waco, Texas, August 15-16. Attendees included Lea Campbell of Lamar University; Sharon Cook of Boise State University; Patricia Crosby of Springfield Technical Community College; Shirley Knazze of Richard J. Daley College; Marcelle Morgan of Workforce Directions; Pamela Pelaez of Seminole Community College; Valerie Sherwood of the Grand Prairie Chamber of Commerce; and Ann-Claire Anderson, Kippy Cooper, and Jim Johnson of the Center for Occupational Research and Development (CORD). Participants shared experiences from the Tech Prep Bridge or Transformations programs or reasons for wanting to establish the programs on their campuses.

Interactive Internet

The National Coalition of Advanced Technology Centers (NCATC), in cooperation with CORD, has developed "*Interactive Internet—A User's Guide and Reference,*" a coursebook and interactive computer program that will help you learn the basic Internet tools. The coursebook is an excellent companion to the interactive software that features online lab exercises. *Interactive Internet* is 16 to 20 hours of instruction and is designed for educational or business use.

Contact CORD Communications at P. O. Box 21206, Waco, TX 76702-1206, call 800-231-3015, or fax 817-776-3906.

Bridge Network Database Updates

Do you want to be included in the Bridge database? Send your name, title, organization, mailing address, phone, fax, and E-mail address to *Bridge Network, P. O. Box 21689, Waco, TX 76702-1689*; fax it to *817-772-8972*, or E-mail it to *bhunter@cord.org*. If you are in our database, be sure to notify us of changes to your information.

New Products

Has your school developed a new curriculum or product that you want to market? Staff members from NCATC and CORD have formed a committee to offer assistance to schools that have developed new curricula or products and are not quite sure of the next step. The committee will review submitted materials and work with you to determine the marketability of your curriculum or product.

Contact Ann-Claire Anderson at 817-772-8756, or send E-mail to anderson@cord.org.

NTPN Conference

The 1996 Annual National Tech Prep Network Conference will be in San Antonio, Texas, September 21-23. Attendees will learn about the mechanics of curriculum research, integration, and development; developing and evaluating assessment strategies; advances in learning technology; academic and occupational curricula for adult learners; or participate in the hands-on Internet session in the Focus Workshops beginning at 1:30 P.M. September 20 and continuing on Saturday morning at 8:30 A.M. Pre-conference sessions begin at 1 p.m. Saturday—some of the featured educational and job-training programs are, Fundamentals of Tech Prep, a Model Tech Prep Curriculum, and new legislation restructuring vocational. The Opening General Session, *21st Century Teaching: Connecting School and Work*, begins at 7:00 P.M. on Saturday. The Bridge Roundtable begins at 8:00 A.M. Monday morning.

Contact NTPN at 800-972-2766 or check NTPN's conference Web page at http://www.cord.org/ntpn/tpconf.htm.

The Bridge

Tell the rest of the country about your Bridge program—or get help starting one in *The Bridge*. Send information you would like to share or problems you want help with to: *The Bridge, P. O. Box 21689, Waco, TX 76702-1689.* Send E-mail to *bhunter@cord.org*, or fax to *The Bridge* at *817-772-8972.*

CORD
Published by the Center for Occupational Research and Development

The Bridge Network Newsletter

October 1995

Several months ago the *Bridge Network* conducted its first formal membership meeting and established *Network* goals. Many of these goals have been accomplished over the past several months, and others can be accomplished through our collective efforts.

Perhaps the most significant achievement is one recently completed—establishment of a *Bridge Network* internet site. This site allows instant access to *Bridge* curriculum information, and provides the opportunity to share with others the techniques, curriculum, and funding opportunities for application to *Bridge* programs. **The *Bridge Network* internet Web page is located at http://www.cord.org.** The CORD home page includes a *Bridge Network* selection item.

Information provided at this site will also include a *Bridge Network* membership roster—a feature scheduled for inclusion near the end of December 1995. Enclosed is the current membership listing of the *Network*. If you have an E-mail address or a correction to the data, or if you prefer that your data not be listed on the Internet site, please contact **Alan Sosbe at CORD (817) 772-8756 or asosbe@cord.org.**

As part of its goals, the *Bridge Network* developed *Bridge* program promotional materials. A copy of the *Bridge* brochure is enclosed. The electronic version of this brochure is available through the Internet connection, and copies are also available through CORD. CORD personnel have disseminated the brochure at conferences hosted by the *National Tech Prep Network*, *Texas Tech Prep*, and the *National Council on Occupational Education*.

Two important and ongoing goals of the *Network* are to:

- compile a list of computer-assisted instruction (CAI) materials known to be appropriate for adult students participating in *Bridge* curricula, and
- develop a list of text materials that meet the contextual learning needs of adult students.

We are seeking your contributions for these valuable resources to postsecondary institutions initiating *Bridge* curricula and to *Bridge* program managers searching for the optimum mix of materials for adult learners. Currently, such listings are not available beyond those materials cited in the *Tech Prep Bridge Administration Guide*. Any materials—developmental reading, writing skills, ESL, and so on—you use in preparing adult students for active participation in a postsecondary program are viable for these listings. Your contribution is needed.

Two *Bridge Network* activities are scheduled for November and December. An informal orientation to the *Bridge Network* will be presented at San Diego City College during the National Coalition of Advanced Technology Centers (NCATC) annual fall conference, November 16-18. CORD will conduct a Tech Prep *Bridge* workshop on December 7-8 at the Roney Training Center located in Waco, Texas. Information on these events is enclosed.

Please continue to provide ideas and recommendations that further the direction for the *Network*. Feel free to contact Alan Sosbe at CORD for additional information pertaining to *Bridge* programs.

Center for Occupational Research and Development
P.O. Box 21689, Waco, Texas 76702-1689
ph. 817/772-8756, fax 817/772-8972, E-mail asosbe@cord.org

Upcoming *Bridge* events......

An informal orientation to the *Bridge Network* will be presented at San Diego City College during the National Coalition of Advanced Technology Centers (NCATC) annual fall conference, November 16-18.

Topics include:

- **Target audiences for *Bridge* Programs**
- **Examples of *Bridge* curriculum structure**
- **Content of *Bridge* coursework**
- **Characteristics of *Bridge* program participants**

A Tech Prep *Bridge* Workshop will be held December 7-8 by the Center for Occupational Research and Development (CORD) in Waco, Texas.

Workshop topics include:

- **Exploring various avenues for funding *Bridge* programs**
- **Observing a *Bridge* program at a local technical college**
- **Identifying suitable adult students for a *Bridge* program**
- **Interacting with adult students involved in a *Bridge* program**
- **Learning how to tailor applied academics to technological careers**
- **Learning about the equipment needed for a *Bridge* program**

For more information contact Alan Sosbe......

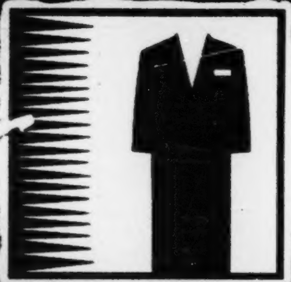
Center for Occupational Research and Development
P.O. Box 21689, Waco, Texas 76702-1689
ph. 817/772-8756, fax 817/772-8972, E-mail asosbe@cord.org

CORD APPLIED MATH CURRICULUM

AIT APPLIED COMMUNICATIONS CURRICULUM

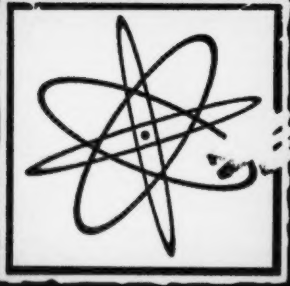
CORD

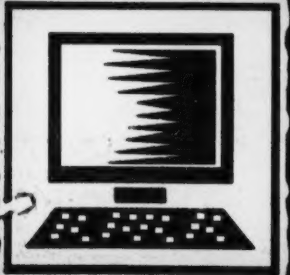
Applied Mathematics™



A Contextual Approach to

INTEGRATED ALGEBRA AND GEOMETRY





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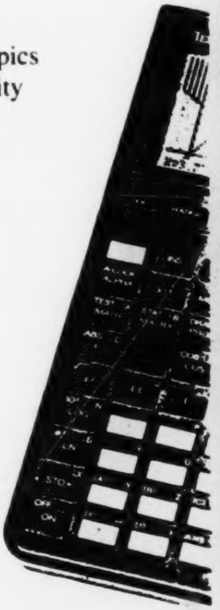
Teaching the Way Students Learn

CORD Applied Mathematics respects different learning styles by providing curriculum materials that empower students to *explore* mathematics, *experience* its applications, *understand* its concepts, and *connect* math to real life experiences.

A Collaborative Effort

The product of a nationwide collaboration, *CORD Applied Mathematics* has been field-tested and funded by over 40 state education agencies which have empowered leading mathematics educators to participate in the development of the course.

CORD Applied Mathematics teaches algebra and geometry concepts in context, in occupational settings. It acknowledges the diversity of learning styles in today's classroom and enables you to support all learners. The course materials engage students in cooperative teams, allowing them to participate in laboratory-centered, hands-on activities that make mathematics concepts practical and relevant. *CORD Applied Mathematics* is a competency-based curriculum that emphasizes problem solving, decision making, and hands-on learning.



Implementation Flexibility

Meets the present and changing mathematical curriculum and student needs of the future

- Multiple-year curriculum focusing on algebra and geometry topics
- Related concepts such as trigonometry, statistics, and probability
- Forty units
- Individually bound for course flexibility
- Satisfaction of multiple course requirements
  - Pre-algebra
  - Algebra
  - Geometry
- Budget sensitive
- Designed for the broad majority of students

Integrated Learning Package

Coordinated multimedia and multi-disciplinary approach to meet the different learning styles of students

- Text materials
- Hands-on laboratory activities
- Cooperative learning exercises
- Workplace-related video programs
- Student Resource Book

NCTM Correlated

- Instructional design conforms to the 14 standards for high schools set by the National Council of Teachers of Mathematics (NCTM)
- Matrix correlating NCTM standards to each unit available

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Teaching the Unit

Getting Started	Learning the Skills	Applying the Skil
• Introduce unit • Watch unit video • Solve video class problem	• Discuss reading assignments • Conduct class activities and discussions • Study examples	• Participate in han on lab activities • Practice problem solving • Use calculators
MOTIVATION	COMPREHENSION	APPLICATION

COURSE CONTENT

CORD Applied Mathematics

For recommended course options in pre-algebra, algebra, and geometry, please call Customer Relations at 800-231-3015.

Students use graphing calculators throughout the algebra component of *CORD Applied Mathematics*.

A	Getting to Know Your Calculator	REVISITING FRACTIONS, DECIMALS, PERCENTS WITH THE HELP OF A CALCULATOR (OPTIONAL UNITS FOR REVIEW)
B	Naming Numbers in Different Ways	
C	Finding Answers with Your Calculator	
1	Learning Problem-solving Techniques	BASIC MATH SKILLS THAT EVERYONE NEEDS
2	Estimating Answers	
3	Measuring in English and Metric Units	
4	Using Graphs, Charts, and Tables	
5	Dealing with Data	
6	Working with Lines and Angles	GEOMETRY
7	Working with Shapes in Two Dimensions	
8	Working with Shapes in Three Dimensions	
9	Using Ratios and Proportions	BASIC SKILLS IN ALGEBRA
10	Working with Scale Drawings	
11	Using Signed Numbers and Vectors	
12	Using Scientific Notation	
13	Precision, Accuracy, and Tolerance	
14	Solving Problems with Powers and Roots	
15	Using Formulas to Solve Problems	
16	Solving Problems That Involve Linear Equations	
17	Graphing Data	
18	Solving Problems That Involve Nonlinear Equations	
19	Working with Statistics	QUALITY CONTROL
20	Working with Probabilities	
21	Using Right-triangle Relationships	INTRO TO TRIGONOMETRY
22	Using Trigonometric Functions	
23	Factoring	HIGHER SKILLS IN ALGEBRA
24	Patterns and Functions	
25	Quadratics	
26	Systems of Equations	
27	Inequalities	
28	Geometry in the Workplace 1	APPLICATIONS OF GEOMETRY IN THE WORLD OF WORK
29	Geometry in the Workplace 2	
30	Solving Problems with Computer Spreadsheets	USING COMPUTERS TO SOLVE PROBLEMS
31	Solving Problems with Computer Graphics	
32	Quality Assurance and Process Control 1	PRACTICE AND APPLICATIONS OF QA/QC IN THE WORKPLACE
33	Quality Assurance and Process Control 2	
34	Spatial Visualization	HIGHER SKILLS IN GEOMETRY
35	Coordinate Geometry	
36	Logic	
37	Transformations	

Looking Back

- Review unit
- Evaluate progress with unit test

REVIEW & ASSESSMENT

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COURSE COMPONENTS

Student Text

- **Individually bound by unit** to offer course implementation flexibility and to give students a sense of completion from unit to unit
- **Problem-solving exercises** range from simple to complex and feature occupationally specific applications
- **Eighth-grade reading level**
- **Cooperative learning opportunities** promote active learning and invite exploration
- **Real-life problems** solved with scientific and graphing calculators

Teacher's Guide

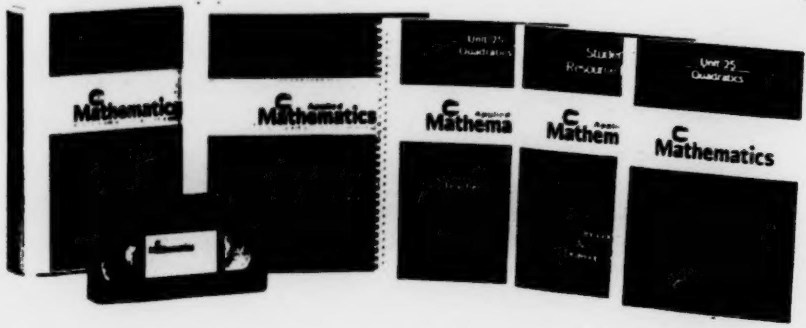
- **Spiral-bound by unit** to correspond to student texts
- **Complete student edition**
- **Teacher notes**
- **Solutions and expected outcomes for:**
  - Video problem
  - Laboratory activities
  - Problem-solving exercises
- **Blackline masters for:**
  - End-of-unit tests (with answers)
  - Transparencies
  - Student handouts

Student Resource Book

- **Compilation of all formulas and tables** guarantees quick and reliable access to all course formulas and tables
- **Instructions for using special equipment** such as vernier calipers and graphing calculators
- **Accu-Line™ drawing surface**, a valuable tool for drawing accurate graphs

Video Program

- **Every unit introduced by video** program to motivate and introduce math concepts
- **Math situations in the workplace** demonstrate the necessity of mathematics skills in the real world
- **Brief discussion of video problem** to ensure understanding of math concept and allow meaningful class participation in the instructional learning process



Hands-on Laboratory Activities

- **Three major activities per unit**
  - Concepts are reinforced through practice and application
  - Students gain unique insight into the role mathematics plays in a wide variety of contexts
  - Single mathematics concepts are applied in different scenarios
- **Focus on integrating skills** in measurement and computation
  - Inexpensive equipment
  - Calculators
- **Bring math to life** and aid in retention of applied concepts

SUPPLEMENTARY MATERIALS

Implementation Resource Book

First-time *CORD Applied Mathematics* teachers benefit from the many years of piloting, testing, and classroom use by master teachers.

- **Implementation tips**, plans, and materials
- **Background information** about course development
- **Equipment list** (with estimated costs)
- **Teacher training strategies**
- **Marketing of course** to students and parents
- **Recruiting and mentoring students**
- **Comprehensive bibliography** of related information

Multiple-choice Question Bank

Formatted for quick, simple, and accurate evaluation.

- **Units A–27**
- **Twenty questions per unit**
- **Multiple uses**
  - Quizzes
  - Pre- and post-tests

Skill Drill Practice Problems

Customized concept review for the student who needs additional practice with specific skills.

- **Units A–33**
- **Thirty questions per unit** (with answers)
  - Self-checking
  - Immediate positive reinforcement for correct work
  - Indicator of additional practice needed

Spanish Edition

- ***Matemática Aplicada***
  - Student texts
  - Teacher's guides
  - Units A–15
- **Direct translation** of *CORD Applied Mathematics* allows Spanish-speaking students to explore every concept in the course with English-speaking classmates

Teach[illegible]ning
support services are availabl
from CORD Communications
Please call Training anc
Conference Services a
800-231-3015 for more information

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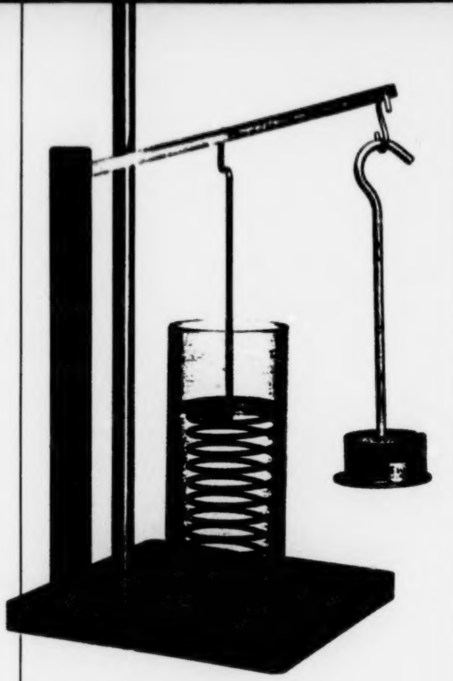

Unit 5—**Energy**
Lab 5MF1: Measuring
the potential energy
of a spring

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Participating State Agencies

The following states are members of the *Principles of Technology* consortium. For the current status of your state's membership, please contact your state or provincial department of education or CORD.

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FOR MORE INFORMATION:
Call CORD Communications, Inc.
at 800-231-3015
or write
P.O. Box 21206
Waco, TX 76702-1206

PRINCIPLES OF
TECHNOLOGY™

“When will I ever use this?”

Over seventy percent of high school students have difficulty relating the formulas and theories they are taught in the classroom to their everyday lives or their future jobs. These students are contextual learners—they learn best and retain more if they are taught abstract concepts through application.

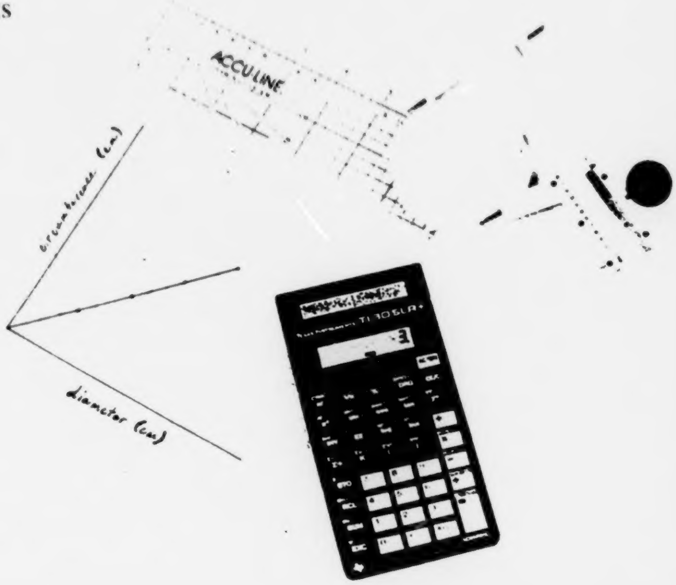
CORD Applied Mathematics' motivational video programs take students into the workplace and demonstrate the use of mathematics on the job. Through the video presentation and class discussion, students associate and recognize the mathematics skills they will need in the rapidly changing workplace. Math is seen as a tool, a necessary component to technical success rather than a stand-alone abstraction. In *CORD Applied Mathematics*, math has meaning to students and a place in the real world.

Workplace lab activities created by business and industry focus on measurement and computation, and help students develop critical thinking skills.

Appropriate for Tech Prep Students

Ideal for implementation in Tech Prep programs and other school-to-work initiatives. *CORD Applied Mathematics*:

- Uses contextually based teaching methods
- Meets workplace competencies set forth by the SCANS report, *What Work Requires of Schools*
- Emphasizes:
  - Problem solving
  - Decision making
  - Hands-on learning
  - Real-life applications



Hands-on lab activities offer students exposure to special equipment like the vernier caliper, the Accu-Line™ drawing grid, and the scientific calculator, while honing measurement and computation skills.

Occupational Applications

CORD Applied Mathematics integrates three main areas—pre-algebra, algebra, and geometry, while emphasizing the workplace application of each concept and skill. Forty exercises per unit apply to six occupational areas, including:

- **General**
- **Business and Marketing**
- **Home Economics**
- **Agriculture/Agribusiness**
- **Health Occupations**
- **Industrial Technology**

Exercises are coded in the teacher's guide to allow for mastery and practice of concepts in different scenarios. Levels of complexity include: *A–Less Difficult*; *B–Average Difficulty*; and *C–More Difficult*.

AIT
The Learning Source
Agency for Instructional Technology
Box A, Bloomington, IN 47402-0120
800-457-4509   FAX 812-333-4218

From the Developers of ***Principles of Technology, Workplace Readiness, Mathemedia,*** *and* ***Economics at Work.***

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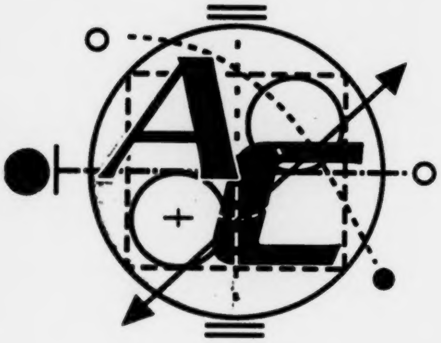

APPLIED
COMMUNICATION

APPLIED
COMMUNICATION
Modules 16 & 17

Modules 1-15

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APPLIED COMMUNICATION

Communication Skills for Grades 9-12 & Adults

Introduce "Technical Writing" and "Electronic Communication" into your ***Applied Communication*** curriculum. Illustrate how technology is making new demands on workers' communication skills, while providing opportunities for students to read and enjoy literature. Practice writing activities typical of workplace communication—letters, memos, reports, and written instructions. Explore how a variety of electronic technologies are used for reading, writing, speaking, and listening in the workplace.

Modules 16 & 17

Technical Writing

Explore a process for performing the kinds of technical writing required of most workers. Introduce technical writing in a variety of workplace settings and provide opportunities to use technical writing to accomplish writing tasks. Illustrate examples of technical writing in the development of a computer program to teach worker-safety at a nuclear facility. (#275-M16)

Electronic Communication

Examine skills required to communicate effectively with electronic media. Introduce new and emerging communication technologies and provide practice using electronic technologies that learners are likely to encounter in the workplace (e.g., e-mail, electronic databases, bulletin boards, FAX, CD-ROM, voice mail). Demonstrate examples of communication between members of the news team at the CNN Newscenter in Atlanta. (#275-M17)

PURCHASE

	Standard Prices	Consortium Prices
Module 16: Technical Writing (#275-M16)	**$210**	**$45**
Module 17: Electronic Communication (#275-M17)	**$210**	**$45**

(Each module includes one Instructor's Guide, one Learner's Guide, and one VHS videocassette in a vinyl album.)

Additional Print

	Standard Prices	Consortium Prices
Instructor's Guides	**$8.25**	**$6.25** Each
Learner's Guides (One needed for each student)	**$4.25**	**$3.25** Each

***Applied Communication* Modules 16 & 17** were developed by a consortium of state and provincial agencies organized and managed by AIT (1993).

VIDEO
Two 20- to 30-minute programs

PRINT
Two instructor's guides
Two learner's guides

Special Consortium Member Prices

The discounted prices listed here are available to education agencies that supported the development of ***Applied Communication* Modules 16 & 17.**

Consortium Members
(as of July 1993)

AL
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APPLIED COMMUNICATION

Communication Skills
Grades 9-12 & Adults

Teach communication skills required for success in today's workplace. Combine academic studies with hands-on practice of job-related communication skills. Apply reading, writing, listening, speaking, and problem solving to on-the-job situations in five major occupational areas: agriculture, business/marketing, health occupations, home economics, and technical/trade/industrial.

Applied Communication modules each consist of 10 activity-oriented lessons that can be infused into existing courses or used to form the core of a year-long course taught by English/communication, business, or vocational educators. This competency-based curriculum correlates with vocational education and language arts curricula on the high school and postsecondary levels, as well as in adult retraining programs.

VIDEO
Fifteen 20- to 30-minute programs

PRINT
Fifteen instructor's guides
Fifteen student worktexts

Assessment Package

City and Guilds International Certificate in Applied Communication

Call AIT Customer Service at 800-457-4509 for details.

Modules 1-15

PURCHASE	Standard Prices	Consortium Prices
Individual Modules (Each module includes one Instructor's Guide, one Student Worktext, and one VHS videocassette in a vinyl album.)	$150	$35
Complete Instructor's Kit (#275-KIT) (Each Complete Instructor's Kit includes Instructor's Guides, Student Worktexts, VHS videocassettes, and vinyl albums for Modules 1-15.)	$1,795	$525
Additional Print		
Set of Instructor's Guides for Modules 1-15–Bound (#275-SET-I)	$115	$93.75
Set of Student Worktexts for Modules 1-15 (#275-SET-S) (One set needed for each student.)	$60	$48.75

Contact AIT Customer Service at 800-457-4509 for individual module print prices

Applied Communication was developed by a consortium of state and provincial agencies organized and managed by AIT (1988).

Special Consortium Member Prices

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Applied Communication **Modules 1-15** Consortium Member States

AL AK AZ AR CA
CO CT DE DC FL
GA HI ID IL IN
IA KS KY LA ME
MD MA MI MN MS
MO MT NE NV
NH NJ NM NC
ND OH OK OR
PA RI SC SD
TN UT VT VA
WA WV WI WY

New York, Texas, and Canadian customers please call AIT Customer Service at 800-457-4509 for pricing and ordering information.

Modules 1-15

Communicating in the Workplace
Introduce the communication process model and examine the importance of effective communication. Examine strategies for overcoming common barriers to effective communication. See examples from a resort hotel and a furniture store. (#275-M01)

Gathering and Using Information in the Workplace
Describe communication skills needed for identifying information needs in the workplace. Explore strategies for locating, gathering, reviewing, and synthesizing information on the job. Illustrate examples from a hair salon and a construction site. (#275-M02)

Using Problem-Solving Strategies
Introduce systematic strategies for solving problems in the workplace. Demonstrate examples of strategies in action at a dairy farm and a sports therapy clinic. (#275-M03)

Starting a New Job
Review employers' expectations of new workers and employees' expectations of new jobs. Show discussions with a variety of employers and employees, and observe workers at a music store starting their jobs. (#275-M04)

Now Available
An extensive correlation of *Applied Communication* module outcomes with SCANS Competencies. Call AIT Customer Service at 800-457-4509 for details.

Communicating with Co-workers
Examine the information flow in the workplace. Discuss verbal and nonverbal messages, reflective listening, and assertive communication. Show how these methods are dealt with at a publishing company, and illustrate some co-worker communication difficulties. (#275-M05)

Participating in Groups
Explore effective skills for observing, analyzing, and achieving consensus or compromise. Investigate examples of workers who must work together effectively in a sandwich shop and at a business office. (#275-M06)

Following and Giving Directions
Introduce strategies for following and giving effective oral and written directions. Demonstrate techniques being used at a construction site and a commercial greenhouse. (#275-M07)

Communicating with Supervisors
Investigate exchanging information, requesting information, and presenting problems. Show discussions with supervisors and employees, and examples from a dental lab. (#275-M08)

Presenting Your Point of View
Examine strategies for planning, organizing, and delivering persuasive messages. Illustrate examples of techniques used among staff at a business office and an agricultural store. (#275-M09)

> "... teachers working on communication skills in vocational education will welcome this curriculum.... The videos motivate students to improve communication skills by pointing out that this will improve [their] chances for employment and promotion. This approach is very effective with today's learners...."
>
> *Journal of Reading*

Communicating with Clients and Customers
Review many aspects of communication with clients and customers. Investigate how to identify and interpret nonverbal communication and how to respond to anger or dissatisfaction. Illustrate examples from an automobile showroom and a childcare center. (#275-M10)

Making and Responding to Requests
Explore types of requests found in the workplace and techniques for responding to and making them. Observe examples of communication situations at a construction site and a law office. (#275-M11)

Communicating to Solve Interpersonal Conflict
Describe the causes and effects of interpersonal conflict. Identify strategies for preventing and resolving conflict with co-workers, supervisors, and clients or customers. Demonstrate an example of solving conflict on the job. (#275-M12)

Evaluating Performance
Examine performance evaluation and how employees can use the results to improve job performance or to clarify their own career goals. Observe examples of performance evaluations at a body shop, supermarket, and cleaning service. (#275-M13)

Upgrading, Retraining, and Changing Jobs
Explore the communication skills needed to gather information about job and training opportunities. Examine examples of how and why workers make decisions about upgrading, retraining, and changing jobs. (#275-M14)

Improving the Quality of Communication
Introduce competition, technology, and the international marketplace. Illustrate examples of workers at a fictional company and a B.F. Goodrich plant. (#275-M15)

Informational Program
"About *Applied Communication*" provides teachers with an introduction to the curriculum, explains the structure of the modules, suggests a variety of ways to use them, and points out the growing need for communication skills. **Free with purchase of Modules 1-15.**

Applied Communication **Implementation Training is available from AIT. For details, call AIT Performance Support Workshops at 800-457-4509.**

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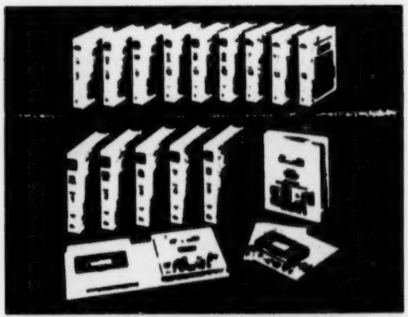

Modules 1-15: The Complete Instructor's Kit includes Instructor's Guides, Student Worktexts, VHS videocassettes, and vinyl albums for all 15 modules.

How To Order

FOR FAST SERVICE
Fill out the forms below and mail a copy to:
AIT Customer Service
Box A
Bloomington, IN 47402-0120

FOR FASTER SERVICE
FAX a copy of these forms to AIT
(812) 333-4278

FOR FASTEST SERVICE
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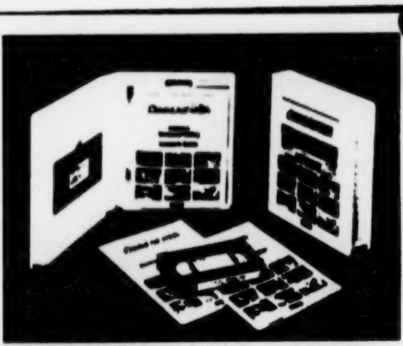
(800) 457-4509
to place your VISA or MasterCard orders.



Modules 16 & 17: Each module includes one Instructor's Guide, one Learner's Guide, and a videocassette in a vinyl album.

Modules 1-15

☐ I want to purchase a Complete Instructor's Kit (#275-KIT). My purchase order number is #________

☐ I only want to purchase Module(s) ________ My purchase order number is #________

☐ I would like to speak with an AIT Sales Representative. The best time to call me is ________

☐ I need to preview ***Applied Communication* Modules 1-15**. Please send me a FREE preview package.

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Area Code/Phone ________ FAX ________

School District ________

Your ***Applied Communication* Modules 1-15** order will be shipped to you with an invoice. If you are not completely satisfied with your order, you may return it to AIT. All orders returned after 30 days of invoice are subject to a 25% restocking fee. Orders may not be returned after 90 days.

Preview requests must be received at least three weeks before the desired preview date. AIT will confirm all dates in writing. Preview materials must be returned to AIT on time or a late fee will be charged.

Before returning any product, you must call AIT Customer Service at 800-457-4509 to obtain a Return Authorization

Modules 16 & 17

☐ I want to purchase Module 16: Technical Writing (#275-M16).

☐ I want to purchase Module 17: Electronic Communication (#275-M17).

My purchase order number is #________

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Authorized Signature ________

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Title ________

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Before returning any product, you must call AIT Customer Service at 800-457-4509 to obtain a Return Authorization Number (RAN). Please indicate this RAN on your shipping labels. All returns must be accompanied by a copy of the original packing slip or purchase order and must be returned in salable condition, shipped prepaid, and insured for the full purchase

VOLUME ONE, NUMBER THREE SUMMER 1996

AIT.NET News

BOOKMARK

Beginning with the 1996-1997 school year, *AIT.Net News* will appear exclusively as an online newsletter. To make sure you enjoy future issues of *AIT.Net News*, "bookmark" AIT's site on the World Wide Web at

http://www.ait.net

The online *AIT.Net News* will continue to provide tips from teachers, resources for teachers, and links to Web sites for you and your students.

TAKEFIVE

How often do you feel like time is managing you? Turn to page two and take these five time saving [illegible]s to work.

CONTENTS

PAGETWO

Time saving tips

PAGETHREE

Seeing is believing

Performance support workshops

PAGEFOUR

Just like kindergarten

FirstView '96

Mark your calendar

Tips from teachers

Course presentation and occupational research

When Sharyn Paige of Wayne, Nebraska, asked for advice on *Workplace Readiness* in the spring issue of *AIT.Net News*, Melissa Hufstetler of Dallas, Georgia, responded with a teaching tip and an outline for an occupational research project. You can also seek a tip or share a tip through AIT.Net Tips at **http://www.ait.net.**

SEEKING A TIP

In what order do you recommend starting the *Workplace Readiness* units?

—Sharyn K. Paige,
Wayne High School #17, Wayne, Nebraska

SHARING A TIP

This is my first year teaching *Workplace Readiness*. We offer it as a one-semester course, so I am now teaching my second semester of the class. I have changed the order that I teach the modules from one group of students to the other.

I suggest you begin with the "Teamwork" module because it gets students acquainted with group projects and the skills they need to be members of an effective team. Next, I would do the "Problem-Solving" module. "Self-Management" would be the last module.

When teaching the "Problem-Solving" unit, consider giving groups "real" workplace problems to solve or role-play. They could even share problems that they have experienced at work or school. Also, they could create problems and have other members of the class solve them.

Another very successful project that I use is the occupational research paper. When I started with the occupational project, some students were shocked to learn what specific jobs entail. Others decided that the occupation they had researched was not for them. It has proven to be the most exciting unit that I teach.

I hope these suggestions have been helpful. Have fun and enjoy teaching the course.

Occupational research paper. Choose an occupation that interests you or one that you plan to pursue. Gather information on the occupation in the following areas:

The self-management skills covered in *Workplace Readiness* will help your students manage their time and efforts on the job.

- general information
- job description
- training and/or education requirements
- job market (present and future)
- advantages and/or disadvantages
- salary schedule
- opportunity for advancement
- benefits (medical and dental insurance, money for continued education and training, commission schedule, etc.)
- sources of information (magazines, books, graphs, computers [GCI], and interviews with people)

Use approximately one-half page to describe each area listed above in detail.

Tell what you have learned about the occupation through your research efforts. The paper may be organized in outline format.

Include a paragraph on why you are interested in the occupation and on whether the occupation can have a positive or negative effect on mankind.

Evaluation: Content—100 points; grammar, spelling, and mechanics—50 points.

—Melissa Hufstetler,
Youth Apprenticeship Facilitator,
East Paulding High School, Dallas, Georgia

For more information on *Workplace Readiness*, call AIT Customer Service at (800) 457-4509.

AIT.NET NEWS PUBLISHED BY THE AGENCY FOR INSTRUCTIONAL TECHNOLOGY BLOOMINGTON INDIANA

TAKEFIVE

Time saving tips

Spare lessons, assessment, and just saying no

How often do you feel like time is managing you? As you move from one class to the next and prepare for the next day, do you wonder when you'll find the time to tackle that special project or catch up on your paperwork? If so, help yourself to these five tips reprinted with permission from *Time Saving Tips for Teachers: How to Be a Good Teacher and Enjoy Your Life* by Clare Carhart and Joanne Strohmer (Ally Publications, P.O. Box 736, Ellicott City, MD, 21041). Two additional tips are in the online *AIT.Net News* at **http://www.ait.net.**

TIP #1 *Managing Materials*

When you are going to do a project, gather all the materials before you start just as you would get out all the ingredients for a recipe before you begin cooking. Put the materials in a basket with a handle so you can transport the project easily if you want to work on it somewhere other than your room. Also, having the materials in a basket allows you to easily put them away when your class returns after lunch. You can quickly resume your work later without having to gather materials again.

TIP #2 *Planning*

Keep an "Oh, my God!" lesson plan with you at all times. Use this when you finish a lesson early, have to cover for another teacher unexpectedly, or when a lesson has gone haywire. This emergency activity can be a mind bender, a puzzle, a book or poem with discussion questions, or anything else that will work regardless of the background of students.

TIP #3 *Assessing Children's Work and Keeping Track of Progress*

If the assignment has objective answers, have copies of homework answers to hand out for students to check their own work at the beginning of class. You can circulate and clear up any concerns. Teach students to put the number correct at the top of the page and collect the work. You can then quickly and at your convenience see how everyone did and enter grades in your grade book. Save the answer sheets to be used by other classes or for the next year.

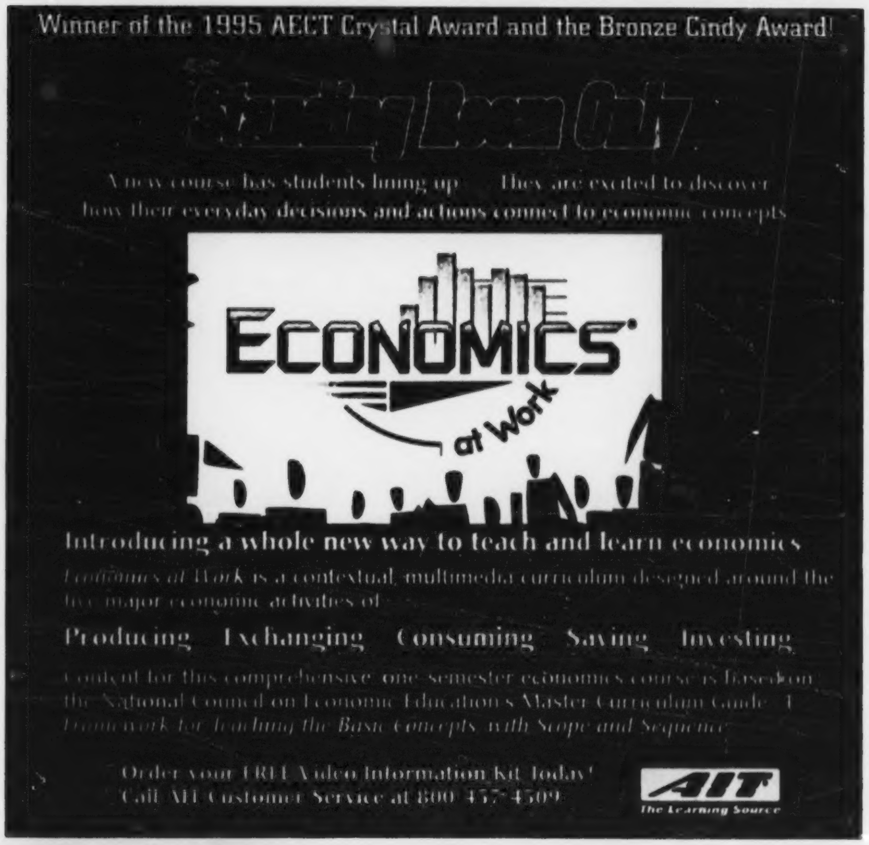
TIP #4 *Learning to say the "N" Word—No*

Do not carry a briefcase to work. If you do, you will be tempted to use it to transport work home. Do not take work home with you unless it is an emergency situation. Finish all work for the next week by the time you leave work on Friday. NEVER take work home for the weekend. You need the break in order to be your best Monday through Friday.

TIP #5 *Saving Minutes*

When you have permission slips or other materials to collect, label a folder or big envelope. Tape a copy of your class list on the front. Put such folders or envelopes in a bin in the front of the room. Teach children to place their materials in the proper place and check off their names on the list. If your youngsters are too small to handle this, recruit an upper-grade child to stand by and help the little ones turn in their papers and get their names checked off.

Would your time management strategies help other teachers manage their time? Give your colleagues the chance to try them out by submitting your time management tips via AIT.Net Tips at http://www.ait.net.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AIT The Learning Source

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MEETINGNEEDS

Seeing is believing

Bring math to life with *Mathematics Is Elementary*

If seeing is believing, than so are counting, measuring, and other key skills your second- through fourth-grade students will use as they master the concepts taught in *Mathematics Is Elementary*, the new program from AIT and the Wisconsin Educational Communications Board.

Produced by General Learning Video, the *Mathematics Is Elementary* curriculum follows NCTM standards and the NAET mathematics strands and includes a professional development component supported by an online service. Each of the 13 lessons in this interactive resource includes a 15-minute video and a chapter in a teacher's guide with activities designed to extend learning and encourage parental involvement. Lessons cover

- algebra and function
- patterns and relations
- collecting and using data
- linear measurement
- place value
- operations and computations
- geometry, 2-D
- weight measurement
- geometry and measurement
- probability and statistics
- number sense and fractions
- geometry, parts and shapes, 3-D
- volume measurement

In Lesson 8, students use everyday items to test several mathematics strategies and guess the number of pennies in a jar.

The real-life examples in these lessons will help students gain confidence in their mathematical abilities and understand the relevance of mathematics to their lives. For example, the video for Lesson 8—"How Much? How Many?"—teaches weight measurement as students see children their age recycling aluminum cans, guessing how many pennies are in a piggy bank, and weighing oranges at a grocery store. Throughout each scenario, teachers are invited to pause the video and involve their students in solving the problem.

For more information on AIT's newest interactive resource, call AIT Customer Service at (800) 457-4509.

Performance support workshops

Another school year ends, and a well-deserved break will soon begin. Take one week, take two. . . . When you're ready to recharge your batteries for next year, AIT is ready for you with performance support workshops on AIT's award-winning resources. The following workshops will be held at AIT headquarters in Bloomington, Indiana:

- *Workplace Readiness*—June 13, August 8–9
- *Applied Communication*—Introductory/Integrating Literature—June 14, August 15
- *Communication 2000*—June 15, August 16
- *Mathemedia*—June 20, June 28, August 7, August 21
- *The Road to School to Work*—June 21, June 27, August 14
- *Economics at Work*—June 28–29, August 22–23

Registration fees are $125 for one-day workshops and $225 for two-day workshops (excludes meals, lodging, or transportation). Be sure to register at least two weeks in advance. For further information on AIT performance support workshops, call Mary Jane Lipp at (800) 457-4509, ext. 255.

VOLUMEONE
NUMBERTHREE
SUMMER1996

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INBRIEF

TECHNOS Press, ITV, and calendar

JUST LIKE KINDERGARTEN

Ask leading educator Deborah Meier what a good school is like, and she'll tell you it's just like kindergarten. Students are expected to explore, be interested in new ideas, and work together. Meier considers what makes a good school work and the present state of school reform in New York City in the Summer 1996 issue of *TECHNOS: Quarterly for Education and Technology.*

The summer issue also includes

- insights from Senator Edward Kennedy on the promise of technology,
- insider perspectives on the National Education Summit, and
- a vision of the future from a gifted team of fourth-graders.

To request a sample copy of the summer issue, to subscribe, or to learn more about this award-winning journal, call Amy Bond at (800) 457-4509, ext. 220.

FIRSTVIEW '96

Are you having discipline problems in the classroom? Do your employees need current training in child care? Are your students falling behind in economics and civics?

AIT will debut solutions to these and other challenges during FirstView '96, the largest gathering of producers and distributors of instructional programming for schools in the world.

Scheduled for August 10-15 in Phoenix, Arizona, FirstView '96 will include presentations by AIT on 14 different program options for the 1997-1998 school year. These resources cover staff development, core curriculum for grades pre-K-12, and software products. Information on how you can participate in pre-production of new products will also be available.

As you make plans for the summer, plan on meeting with the AIT broadcast staff at FirstView to discuss your current and future programming needs and discover how you can learn about AIT products through AIT's Web site.

Don't let the opportunity for new program screening, professional conversation, and a great time in Phoenix pass you by!

MARK YOUR CALENDAR

You can meet AIT representatives at the following meetings scheduled for the summer months:

JULY

10-15 10th Annual "High Schools That Work" Staff Development Conference, Southern Regional Education Board, Louisville, KY. Contact: Pat Mikos, (404) 875-9211.

AUGUST

10-15 FirstView '96, Phoenix, AZ. Contact: Sandy Johnson, Pacific Mountain Network, (303) 837-8000, ext. 218.

ONCALL

The Agency for Instructional Technology is on call to answer your questions day or night through AIT's Web site at **http://www.ait.net.** AIT's resource professionals are also available at (800) 457-4509 or (812) 339-2203 during business hours.

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For additional information on all of AIT's products!

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APPLIED COMMUNICATIONS CURRICULUM

ADULT ED SCHOOL TO WORK GRANT

APPLIED COMMUNICATION (AIT) MODULES

The following modules were used in these classes:

Communicating in the Workplace- Introduces the communication process

Using Problem Solving Strategies - Systematic approach to problem solving

Participating in Groups - Proper procedure and techniques for working in groups including how to observe, analyze, and compromise.

Following and Giving Directions - Demonstrates how to give and follow directions oral and written directions.

Communicating with Supervisors - Instructs student on how to present information (including problems) and request information with their supervisor.

Presenting Your Point of View - Helps student to plan, organize, and deliver their persuasive messages.

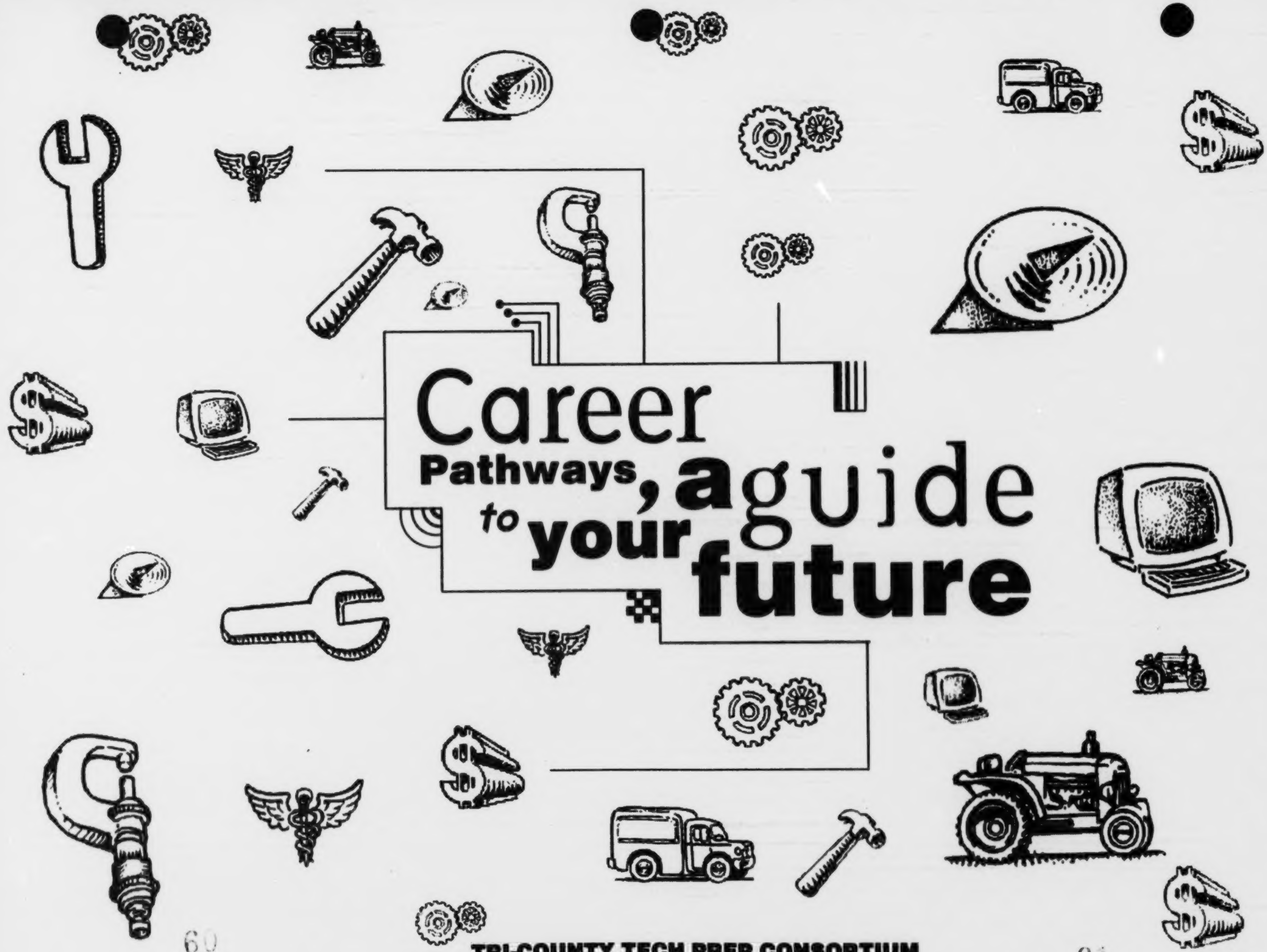
Communicating to Solve Interpersonal Conflict - Shows causes and effects of conflict and how to prevent and resolve these conflicts.

CAREER PATHWAYS GUIDE

PENN STATE BEHREND CAREER PATHWAY

EDINBORO UNIVERSITY CAREER PATHWAY

Career Pathways, a guide to your future



TRI-COUNTY TECH PREP CONSORTIUM

What is a Career Pathway?

Each career pathway identifies a recommended series of courses in several different areas of study. The course sequence is designed to guarantee that you will develop the basic skills that will help you to succeed in the employment areas which you select. It is recommended that you take a designated sequence of courses beginning with grade seven. In each academic area there are course options in order to accommodate the different pace at which some students will complete the sequence and to provide flexibility in meeting your interests.

Some pathways have formal articulation agreements that link the high school coursework directly with a postsecondary training program. These pathways are identified by a symbol underneath the listed career areas. 🤝 If the pathway you select has a formal articulation agreement, the course sequence should be followed as closely as possible in order for you to transition smoothly into the postsecondary facility.

Further information can be found in the section dealing with articulation agreements.

How to use the career pathway course sequences

The pathways in this guide provide generic course sequences for each of the ten clusters. The information provided for each cluster is as follows:

❶ There is a glossary of terms on page two that you can refer to if you don't understand a particular term used in this booklet.

❷ At the top left of each course sequence is the name of the career cluster and the CIP code for that cluster. A CIP code is a unique identifier that can be used to look up information on that specific cluster in other career books, computer systems, and counseling resources.

❸ At the top right-hand side is a listing of specific occupations which are included within that cluster. More information about specific occupations can be obtained by researching the CIP code for each of the occupations. Each occupation may lead to one or more specific training programs.

❹ If there is a local vocational training program available for the generic career cluster or specific occupation, the name of the various degrees and/or certificates appropriate to that cluster are listed in the column labeled "Regional Postsecondary Certification/Degree Programs."

❺ If there is an active articulation agreement associated with that vocational cluster, the names of schools that have signed the agreement will appear at the bottom left corner of the page.

❻ In the center of each page is a table of curriculum areas and grade levels. Included in each cell are the courses which are recommended in each area at each grade level. These are general recommendations based on the literature dealing with that career cluster. Not all courses will be available at all buildings; you will need to meet with your high school guidance counselor to get that information.

Career Pathways: An Introduction to Course Sequences

Throughout Pennsylvania and the nation, employers report that rewarding careers are available, but such careers require strong academic and technical skills. By the year 2000, the average job will require almost fourteen years of formal education. Twenty years ago a high school diploma in general education was enough to find employment. Now, with advanced technology and increased global competition, today's students need much more.

The Pennsylvania Department of Education, Bureau of Vocational and Technical Education has identified ten "career clusters" that include all of the basic vocational-technical training opportunities in the Commonwealth.

The ten clusters are:

- Agriculture/Natural Resources Technology
- Business/Information/Computer Technology
- Communications Technology
- Consumer Service Technology
- Construction Technology
- Health Care Technology
- Mechanics/Installers/Repairers Technology
- Engineering Technology
- Production Industries Technology
- Transportation/Material Moving Technology

This guide provides a blueprint for building a sound preparation for eventual employment, showing the course sequences suggested by experts in each occupation. It should be used for preliminary career planning. Each planned course sequence is designed to automatically link with an associate degree or other postsecondary training program. By completing the recommended series of courses in high school, the student will have mastered the necessary skills to enter and complete postsecondary training or move directly into successful employment.

In cooperation with the Pennsylvania Department of Education, the course sequences that are presented in this guide have been developed to help students identify the best pathways to career success. The purpose of this guide is to familiarize you with these pathways.

In order to prepare for employment in one of the "cluster" areas, students are encouraged to follow a specific sequence of courses called a "career pathway." These "career pathways" are designed to provide students with a complete foundation which will prepare them for employment and future postsecondary training. Each pathway is a map of the academic and technical preparation needed for future training and successful employment.

For students who do not have any specific career interest:

You should review each of the generic pathways to get an idea of the various broad occupational areas and the kinds of jobs that could be found within each. Materials that discuss jobs contained within each cluster are available through high school guidance offices .

For students who have some interest in a cluster area:

You should find the career cluster that contains your area of interest. Review the courses which are recommended at each grade level and the specific occupations available within that cluster, along with the kinds of postsecondary training which is required.

For course planning:

You should select the pathway that is related to your interest area. Course planning can be done using the printed sequence or your blank pathway form in this guide. On the pathway guide, highlight the courses that you have completed with a passing grade and those you plan to take in the future. If you use the blank pathway form in this guide, transfer the title of each course you have taken and those you plan to take by subject areas into the grade section of the form. After you finish a draft of your sequence, contact your guidance counselor to schedule the courses for you. If you are beyond the ninth grade, you should review the course sequences for the years prior to your present grade. You may be able to schedule those which you may have missed.

Articulation Agreements

Articulation is the process of achieving a smooth flow from high school to postsecondary education to the workforce. It requires cooperation between schools and course planning by the student. The goal is to create an educational system which includes grades eight through fourteen (or sixteen) that is interrupted only when the need to work overrides the need to develop increased technical skills.

Articulation eliminates unnecessary loss of credit, credit delays, remedial coursework and the unnecessary duplication of coursework. Such an agreement can save time and money for the student, the parent and the employer. These agreements also offer advanced technical skill training so that students can move beyond the basic program requirements. Such advanced skill training provides the employee with an advantage over others who have not participated in the articulation process.

The articulation agreements related to each generic pathway are noted in the lower left corner of the pathway. The specific postsecondary facility with the signed articulation agreement is identified.

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Applied Academics

As you review the recommended course sequences, you will note frequent references to "applied" courses. These are specially designed courses which emphasize instruction through the use of "hands on" manipulatives and problem solving. These courses are related to the kinds of applications for which academic knowledge is used in the real world. Many of these courses are now being offered in local school districts. Contact your high school counselor to see if and when they are offered in your building. Applied courses attempt to provide you with high academic skills in a format that makes it interesting and relevant. These courses include: **Applied Mathematics I and II, Principles of Technology (Applied Physics), Applied Biology/Chemistry I and II, and Applied Communications.**

Now Let's Plan Your Career!

To complete the career pathway form in this guide, simply copy the courses from your chosen pathway by grade onto the form and give it to your guidance counselor. This will be your basic course sequence for your high school career. If areas in your chosen pathway contain elective courses, you must meet with your guidance counselor to complete these selections. From that point on, it is a matter of completing the courses with high academic grades, regular class attendance and strong class participation.

If you have chosen a cluster that has specific articulation agreements, you should check with both your guidance counselor and the identified postsecondary facility to obtain specific information about the agreement. This will also update you on any recent changes. The postsecondary facility will want to know that you are pursuing the recommended course sequence with the specific goal of entering their facility through the agreement. All of this communication will help you move smoothly from the secondary to the postsecondary program.

If you choose employment along this pathway, either during your high school years or after graduation, it is important to let your potential employer know of your chosen career pathway. The employer may be able and willing to help you with your career goals through advice, on-the-job training, or even financially, through scholarships. These options are often available only to those who ask, so open those communication doors for yourself and ask.

This guide is designed to help you plan your future. It's always best to start at the beginning. You are starting an exciting process, so plan to put both time and energy into developing it. Then you will finish your education with all the skills you will need to **BE ALL YOU CAN BE!**

Glossary of terms

(AET) Associate Degree in Engineering Technology:
A two-year postsecondary program of studies resulting in a specific degree.

Applied Academics:
A group of courses which are taught using "hands on" and "project oriented" methods. These courses provide strong academic skills while emphasizing relevance to real life applications.

Articulation Agreement:
A term used to describe a written agreement between a secondary school and a postsecondary institution outlining which high school credits will be accepted for credit, and the conditions for acceptance if the high school sequence of studies is completed.

(AS) Associate Degree:
A two-year postsecondary program of studies resulting in a specific degree.

(BA) Bachelor of Arts Degree, (BFA) Bachelor of Fine Arts, (BS) Bachelor of Science Degree:
A four-year postsecondary program of studies resulting in a specific degree.

Career Cluster:
A broad "family" of occupations sharing common characteristics.
The PA Deptment of Education has identified 10 clusters.

CIP Code:
Classification of Instruction Program code given to every occupation, allowing for the investigation of information about that career area.

Generic:
Not specific to any program. If something is generic, it will apply to a wide range of subjects.

(CT) Certificate Program:
A sequence of courses at a postsecondary facility, usually between 30 and 50 credits, that results in a certificate in a specific technical training program.

Planned Sequence:
A progressive series of courses that build upon each other in developing a solid foundation for future technical studies.

Postsecondary:
A term used to describe the schools or training programs that follow completion of a high school diploma.

Tech Prep:
A term used to describe a six-year sequence of courses leading to an Associate Degree.
The sequence includes grades nine, ten, eleven, twelve, and postsecondary years one and two.

HOW TO READ THE RECOMMENDED PATHWAY GUIDES

Sample Cluster Map

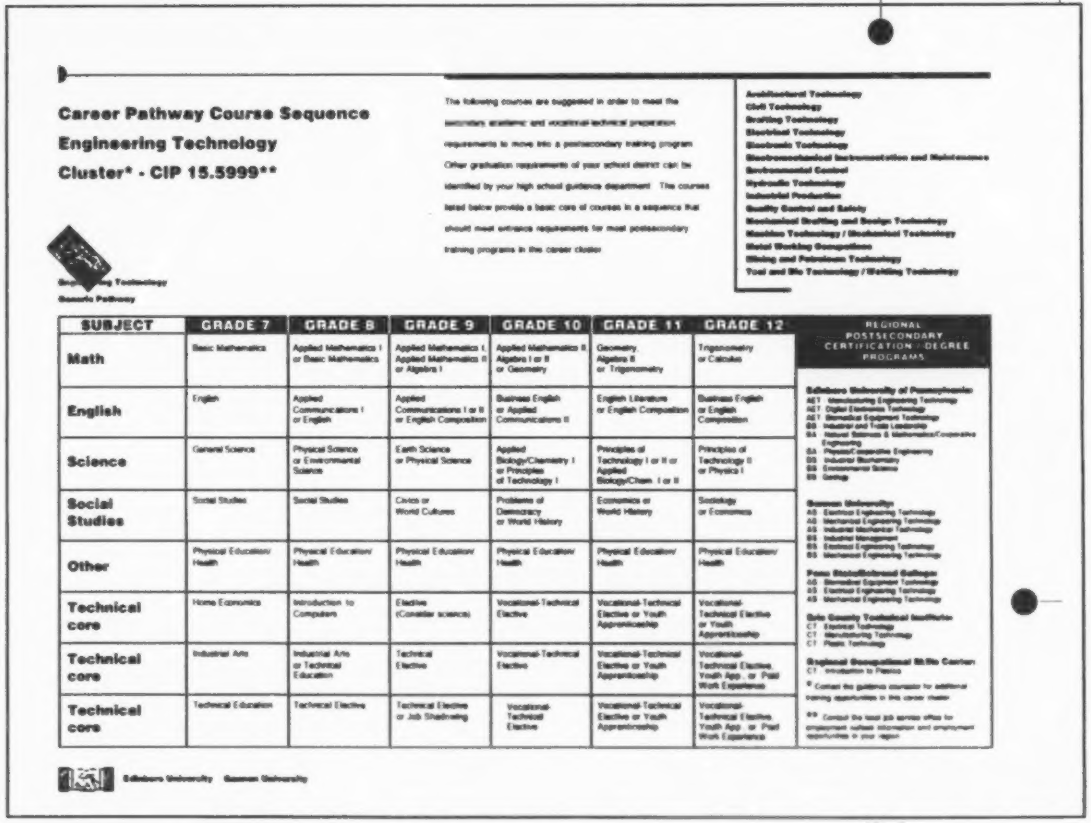
Regional postsecondary training programs related to this cluster are listed in this section

List of career areas included in this cluster are found here

Name of Career Cluster and CIP code

Course Sequence Map by grade and subject

Regional schools with articulation agreements in this cluster



Career Pathway Course Sequence
Engineering Technology
Cluster* - CIP 15.5999**

Engineering Technology
Generic Pathway

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Architectural Technology
Civil Technology
Drafting Technology
Electrical Technology
Electronic Technology
Electromechanical Instrumentation and Maintenance
Environmental Control
Hydraulic Technology
Industrial Production
Quality Control and Safety
Mechanical Drafting and Design Technology
Machine Technology / Mechanical Technology
Metal Working Occupations
Mining and Petroleum Technology
Tool and Die Technology / Welding Technology

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I, Applied Mathematics II or Algebra I	Applied Mathematics II, Algebra I or II or Geometry	Geometry, Algebra II or Trigonometry	Trigonometry or Calculus
English	English	Applied Communications I or English	Applied Communications I or II or English Composition	Business English or Applied Communications II	English Literature or English Composition	Business English or English Composition
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Applied Biology/Chemistry I or Principles of Technology I	Principles of Technology I or II or Applied Biology/Chem. I or II	Principles of Technology II or Physics I
Social Studies	Social Studies	Social Studies	Civics or World Cultures	Problems of Democracy or World History	Economics or World History	Sociology or Economics
Other	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health
Technical core	Home Economics	Introduction to Computers	Elective (Consider science)	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective or Youth Apprenticeship
Technical core	Industrial Arts	Industrial Arts or Technical Education	Technical Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App., or Paid Work Experience
Technical core	Technical Education	Technical Elective	Technical Elective or Job Shadowing	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App., or Paid Work Experience

REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS

Edinboro University of Pennsylvania
AET Manufacturing Engineering Technology
AET Digital Electronics Technology
AET Biomedical Equipment Technology
BS Industrial and Trade Leadership
BA Natural Sciences & Mathematics/Cooperative Engineering
BA Physics/Cooperative Engineering
BS Industrial Biochemistry
BS Environmental Science
BS Geology

Gannon University
AS Electrical Engineering Technology
AS Mechanical Engineering Technology
AS Industrial Mechanical Technology
BS Industrial Management
BS Electrical Engineering Technology
BS Mechanical Engineering Technology

Penn State/Behrend College
AS Biomedical Equipment Technology
AS Electrical Engineering Technology
AS Mechanical Engineering Technology

Erie County Technical Institute
CT Electrical Technology
CT Manufacturing Technology
CT Plastic Technology

Regional Occupational Skills Center
CT Introduction to Plastics

* Contact the guidance counselor for additional training opportunities in this career cluster

** Contact the local job service office for employment outlook information and employment opportunities in your region

Edinboro University Gannon University

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Career Pathway Course Sequence Business/Information/Computer Technology Cluster* - CIP 52.5999**

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Business Data Processing
Computer Information Science
Business Education
Business Training
Office Technology
Administrative Assistant
Accounting
Business Administration
Microcomputer Systems
Information Management Systems
Computer Science
Secretarial Science
Accounting Technician

Business/Information/Computer Technology Generic Pathway

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I or Applied Mathematics II or Algebra	Applied Mathematics II or Algebra I or II or Geometry	Geometry or Algebra II or Trigonometry	Trigonometry or Business Calculus
English	English	Applied Communications I or English	Applied Communications II or English Composition	Business English or Applied Communications II	English Literature, English Composition, or Applied Communications	Business English
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Applied Biology/Chemistry I	Principles of Technology I or II, Applied Biology/Chem. I or II	Executive Office Training (in lieu of a science course)
Social Studies	Social Studies	Social Studies	Civics or World Cultures	World Cultures or Economics	Economics or U.S. History	U.S. Government (sem.) Business Law (sem.)
Other	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education / Health
Technical core	Home Economics	Introduction to Computers	Elective (Consider science)	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective or Youth Apprenticeship
Technical core	Industrial Arts	Industrial Arts or Technical Education	Technical Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience
Technical core	Technical Education	Technical Elective	Keyboarding I	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience

REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS

Edinboro University of Pennsylvania:
BS - Business Administration
AS - General Business Administration
BS - Economics
AS - Computer/Information Processing Technology
BS - Computer Science
AS - Secretarial Science

Penn State/Behrend College:
AS - Business Administration

Mercyhurst College:
AS - Business Administration
AS - Office Mgmt./Legal Office
AS - Office Mgmt./Medical Transcriptionist
AS - Office Mgmt./Business Office
AS - Office Technology/Administrative Assistant
CT - Office Assistant
CT - Computer Information Specialist
CT - Legal Office Specialist

Gannon University:
AS - Legal Assistant
AS - Business Administration
BS - Management Information Systems
BS - Business Administration

* Contact the guidance counselor for additional training opportunities in this career cluster.

** Contact the local job service office for employment outlook information and employment opportunities in your region.

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Career Pathway Course Sequence Communications Technology Cluster* - CIP 50.5999**

Communications Technology
Generic Pathway

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Audio/Visual Communications Technology
Acting/Theater Productions
Commercial Art
Management Information Systems
Graphic Arts
Printing
Marketing
Distributive Education
Commercial Photography
Film-Video Making
Cinematography and Production

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I or Applied Mathematics II or Algebra I	Applied Mathematics II or Algebra I or II or Geometry	Geometry or Algebra II or Trigonometry	Trigonometry or Pre-Calculus
English	English	Applied Communications I or English	Applied Communications II or English Composition	Business English or Applied Communications II	English Literature, English Composition or Journalism	English Literature, English Composition or Journalism
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Applied Biology/Chemistry I or Principles of Technology I	Principles of Technology I or II, Applied Biology/Chem. I or II	Applied Biology/Chemistry II or Science elective
Social Studies	Social Studies	Social Studies	Civics or World Cultures	Problems of Democracy or World History	Economics or World History	Sociology, Psychology or Sociology elective
Other	Physical Education/Health	Physical Education/Health	Physical Education/Health	Physical Education/Health	Physical Education/Health	Physical Education/Health
Technical core	Home Economics	Introduction to Computers	Elective (Consider foreign language)	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience
Technical core	Industrial Arts	Industrial Arts or Technical Education	Technical Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience
Technical core	Technical Education	Technical Elective	Technical Elective or Job Shadowing	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience

REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS

Edinboro University of Pennsylvania:
BA - Drama
BA - English

Gannon University:
BA - Communication Arts
BA - Communication English
BA - Theater & Communication Arts

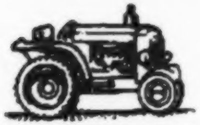
Penn State University:
BA - Advertising
BA - Broadcast - Cable
BA - Film & Video
BA - Journalism
BA - Mass Communications

Mercyhurst College:
AS - Materials Management
AS - Sales Management
CT - Production & Inventory Control Technician
CT - Purchasing Technician
CT - Sales Specialist

*Contact the guidance counselor for additional training opportunities in this career cluster.

** Contact the local job service office for employment outlook information and employment opportunities in your region.

Career Pathway Course Sequence
Agriculture/Natural Resources
Technology Cluster* - CIP 01.5999**



Agriculture/Natural Resources
Generic Pathway

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Agricultural Business/Economics
Agricultural Mechanization
Agricultural Management
Agricultural Sciences
Natural Resources Management
Forest Harvesting and Production Technology
Logging/Timber Harvesting
Horticulture

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I, Applied Mathematics II or Algebra	Applied Mathematics II, Algebra I or II or Geometry	Geometry or Algebra II or Trigonometry	Trigonometry or Calculus
English	English	Applied Communications I or English	Applied Communications I or II or English Composition	Business English or Applied Communications II	English Literature or English Composition	Business English or English Composition
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Applied Biology/Chemistry I or Principles of Technology I	Principles of Technology I or II or Applied Biology/Chem. I or II	Principles of Technology II or Physics I
Social Studies	Social Studies	Social Studies	Civics or World Cultures	Problems of Democracy or World History	Economics or World History	Sociology or Economics
Other	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health
Technical core	Home Economics	Introduction to Computers	Elective (Consider science)	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprentice	Vocational-Technical Elective or Youth Apprenticeship
Technical core	Industrial Arts	Industrial Arts or Technical Education	Technical Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprentice	Vocational-Technical Elective, Paid Work Exp. or Youth Apprentice
Technical core	Technical Education	Technical Elective	Technical Elective	Vocational-technical Elective, Job Shadowing or Youth Apprenticeship	Vocational-Technical Elective, Job Shadowing or Youth Apprenticeship	Vocational-Technical Elective Paid Work Exp. or Youth App.

REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS

Edinboro University of Pennsylvania:
BS - Environmental Science
BS - Biology
BA - Earth Sciences
BA - Environmental Studies/Geography

Penn State University:
AS - Agricultural Business

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* Contact the guidance counselor for additional training opportunities in this career cluster.

** Contact the local job service office for employment outlook information and employment opportunities in your region.

Career Pathway Course Sequence
Consumer Service Technology Cluster* - CIP 20.5999**

Consumer Service Technology
Generic Pathway

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Consumer/Homemaking Home Economics
Child Care/Guidance Management and Services
Clothing/Apparel/Textile Mgmt., Production, Serv.
Food Production, Management and Services
Home Furnishings/Equipment Mgmt., Prod., Serv.
Commercial Foods
Food Production Management
Food Service

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I, Applied Mathematics II or Algebra I	Applied Mathematics II, Algebra I or II or Geometry	Geometry, Algebra II or Trigonometry	Trigonometry or Calculus
English	English	Applied Communications I or English	Applied Communications I or II or English Composition	Business English or Applied Communications II	English Literature or English Composition	Business English or English Composition
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Applied Biology/Chemistry I or Principles of Technology I	Principles of Technology I or II or Applied Biology/Chem. I or II	Principles of Technology II or Physics I
Social Studies	Social Studies	Social Studies	Civics or World Cultures	Problems of Democracy or World History	Economics or World History	Sociology or Economics
Other	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health
Technical core	Home Economics	Introduction to Computers	Elective (Consider science)	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective or Youth Apprenticeship
Technical core	Industrial Arts	Industrial Arts or Technical Education	Technical Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience
Technical core	Technical Education	Technical Elective	Technical Elective or Job Shadowing	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience

REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS

Edinboro University of Pennsylvania:
BS - Nutrition
AS - Pre-School Education
BS - Elementary/Early Childhood Education

Gannon University:
CT - Nanny
BS - Dietetics
AS - Early Childhood

Mercyhurst College:
CT - Hospitality Assistant
AS - Hospitality Management
AS - Early Childhood Education

Penn State University:
BS - Food Science
BS - Hotel, Restaurant & Institutional Mgmt.
BS - Nutrition

* Contact the guidance counselor for additional training opportunities in this career cluster.

** Contact the local job service office for employment outlook information and employment opportunities in your region.

Career Pathway Course Sequence
Construction Technology
Cluster* - CIP 46.5999**

Construction Technology
Generic Pathway

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Carpenter
Mason/Tile Setter
Electrician
Electrical/Power Transmission
Plumber/Pipefitter
Construction/Building Maintenance and Mgmt.
Building Construction Occupations

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12	REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I or Applied Mathematics II or Algebra I	Applied Mathematics II, Algebra I or II or Geometry	Geometry, Algebra II or Trigonometry	Trigonometry or Calculus	**Edinboro University of Pennsylvania:** BA - Industrial and Trades Leadership AS - Digital Electronics Technology **Gannon University:** BS - Electrical Technology BSEE - Electrical Engineering AS - Electronic Technology **Penn State University:** BS - Architecture BS - Architectural Engineering BS - Electrical Engineering BS - Structural Design & Engineering Technology
English	English	Applied Communications I or English	Applied Communications I or II or English Composition	Business English or Applied Communications II	English Literature or English Composition	Business English or English Composition	
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Applied Biology/Chemistry I or Principles of Technology I	Principles of Technology I or II or Applied Biology/Chem. I or II	Principles of Technology II or Physics I	
Social Studies	Social Studies	Social Studies	Civics or World Cultures	Problems of Democracy or World History	Economics or World History	Sociology or Economics	
Other	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	
Technical core	Home Economics	Introduction to Computers	Elective (Consider mathematics)	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth Apprenticeship	
Technical core	Industrial Arts	Industrial Arts or Technical Education	Technical Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Paid Work Exp. or Youth Apprentice	
Technical core	Technical Education	Technical Elective	Technical Elective or Job Shadowing	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Paid Work Exp., or Youth Apprentice	

* Contact the guidance counselor for additional training opportunities in this career cluster.

** Contact the local job service office for employment outlook information and employment opportunities in your region.

Career Pathway Course Sequence
Health Care Technology
Cluster* - CIP 51.5999**

Health Care Technology
Generic Pathway

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Dental Assistant
Health Assistant
Health Professions/Related Sciences
Laboratory Technician
Medical Assistant Nursing Assistant/Aide
Home Health Aide
Personal Care Rehabilitation/Therapeutic Services

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I or Applied Mathematics II or Algebra I	Applied Mathematics II or Algebra I or II or Geometry	Geometry, Algebra II or Trigonometry	Trigonometry or Calculus
English	English	Applied Communications I or English	Applied Communications I or II or English Composition	Business English or Applied Communications II	English Literature or English Composition	Business English or English Composition
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Applied Biology/Chemistry I	Applied Biology/Chemistry II	Chemistry I or Biology I
Social Studies	Social Studies	Social Studies	Civics or World Cultures	Problems of Democracy or World History	Foreign Language	Sociology or Economics
Other	Physical Education/Health	Physical Education/Health	Physical Education/Health	Physical Education/Health	Physical Education/Health	Physical Education/Health
Technical core	Home Economics	Introduction to Computers	Foreign Language	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience
Technical core	Industrial Arts	Industrial Arts or Technical Education	Computer Science Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience
Technical core	Technical Education	Technical Elective	Technical Elective or Job Shadowing	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience

REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS

Edinboro University of Pennsylvania:
BA - Humanities
AA - Human Services
AS - Medical Laboratory Technology
BA - Biology
BS - Biology
BS - Medical Technology
BS - Nuclear Medical Technology
BS - Nursing
AET - Biomedical Equipment Technology
BS - Pre-Dental
BS - Pre-Medical
BS - Pre-Pharmacy
BS - Pre-Veterinary

Gannon University:
AS - Nursing
AS - Radiological Technology
BS - Medical Technology
BS - Professional Nursing
AS - Radiological Technology

Mercyhurst College:
AS - Physical Therapist Assistant***
AS - Office Management/Medical Transcriptionist

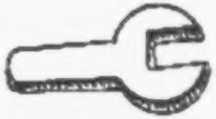
Penn State:
BS - Health Education
BS - Health policy and Administration
BS - Nursing

* Contact the guidance counselor for additional training opportunities in this career cluster.

** Contact the local job service office for employment outlook information and employment opportunities in your region.

*** Degree certification in progress

Career Pathway Course Sequence
Mechanics/Installers/Repairs
Technology Cluster* - CIP 47.5999**



Mechanics/Installers/Repairs Technology
Generic Pathway

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Aircraft Mechanic/Technician
Auto/Diesel Mechanic Technician
Auto Body Technician
Communications Technician
Appliance Technician
Heating/Air Condition/Refrigeration Technician
Heavy Equipment Mechanic/Maintenance
Industrial Machinery Mechanic/Maintenance
Machine Shop/Tool & Die
Power Mechanic Technician
Small Engine Technician
Welding Technician

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I, Applied Mathematics II or Algebra I	Applied Mathematics II or Algebra I or II or Geometry	Geometry or Algebra II or Trigonometry	Trigonometry or Calculus
English	English	Applied Communications I or English	Applied Communications I or II or English Composition	Business English or Applied Communications II	English Literature or English Composition	Business English or English Composition
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Principles of Technology I	Principles of Technology II	Physics I or Applied Biology/Chemistry I
Social Studies	Social Studies	Social Studies	Civics or World Cultures	Problems of Democracy or World History	Economics or World History	Sociology or Economics
Other	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health
Technical core	Home Economics	Introduction to Computers	Elective (Consider mathematics)	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective or Youth Apprenticeship
Technical core	Industrial Arts	Industrial Arts or Technical Education	Technology Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective or Youth Apprenticeship
Technical core	Technical Education	Technical Elective	Technical Elective or Job Shadowing	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Paid Work Exp. or Youth Apprentice

REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS

Edinboro University of Pennsylvania:
AET - Manufacturing Engineering Technology
AS - Biomedical Equipment Technology
BS - Industrial and Trade Leadership

Penn State University:
AS - Materials Engineering Technology

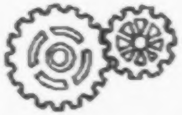
Erie County Technical Institute:
CT - Computer Integrated Manufacturing
CT - Pre-Apprentice Tool & Die
CT - Maintenance Mechanic Technology
CT - Tool and Precision Machine Design
CT - Welding/Metal Fabrication

Regional Occupational Skills Center:
CT - Welding
CT - Industrial Maintenance
CT - Machine Setup and Operations

* Contact the guidance counselor for additional training opportunities in this career cluster.

** Contact the local job service office for employment outlook information and employment opportunities in your region.

Career Pathway Course Sequence
Production Industries Technology Cluster* - CIP 48.5999**



Production Industries Technology
Generic Pathway

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Drafting
Graphics/Printing
Metal Fabrication
Precision Production Technician
Tool & Die
Welding
Machine Technician
Metal Production

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I, Applied Mathematics II or Algebra I	Applied Mathematics II, Algebra I or II or Geometry	Geometry, Algebra II or Trigonometry	Trigonometry or Calculus
English	English	Applied Communications I or English	Applied Communications I or II or English Composition	Business English or Applied Communications II	English Literature or English Composition	Business English or English Composition
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Principles of Technology I	Principles of Technology II	Physics I or Applied Biology/Chemistry I
Social Studies	Social Studies	Social Studies	Civics or World Cultures	Problems of Democracy or World History	Economics or World History	Sociology or Economics
Other	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health
Technical core	Home Economics	Introduction to Computers	Elective (Consider mathematics)	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective or Youth Apprenticeship
Technical core	Industrial Arts	Industrial Arts or Technical Education	Technical Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth Apprenticeship or Paid Work Exp.
Technical core	Technical Education	Technical Elective	Technical Elective or Job Shadowing	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth Apprenticeship or Paid Work Exp.

REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS

Edinboro University of Pennsylvania:
AET - Manufacturing Engineering Technology

Gannon University:
AS - Industrial Management Technology

Mercyhurst College:
CT - Production and Inventory Control Technician

Erie County Technical Institute:
CT - Quality Control Technology
CT - Industrial Emergency Response Management
CT - Computer Integrated Manufacturing

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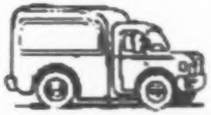
* Contact the guidance counselor for additional training opportunities in this career cluster.

** Contact the local job service office for employment outlook information and employment opportunities in your region.

Career Pathway Course Sequence Transportation/Material Moving Technology Cluster* - CIP 08.5999**



Transportation/Material Moving Technology Generic Pathway

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Marketing

Distributive Education

Material Distribution Management

Hotel/Motel Services/Management

Travel Services Marketing Operations

Marketing and Distribution Operations

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I, Applied Mathematics II or Algebra I	Applied Mathematics II, Algebra I or II or Geometry	Geometry, Algebra II or Trigonometry	Trigonometry or Calculus
English	English	Applied Communications I or English	Applied Communications I or II or English Composition	Business English or Applied Communications II	English Literature or English Composition	Business English or English Composition
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Principles of Technology I	Principles of Technology II	Physics I or Applied Biology/Chemistry I
Social Studies	Social Studies	Social Studies	Civics or World Cultures	Problems of Democracy or World History	Economics or World History	Sociology or Economics
Other	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health
Technical core	Home Economics	Introduction to Computers	Elective (Consider Business Ed.)	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective or Youth Apprenticeship
Technical core	Industrial Arts	Industrial Arts or Technical Education	Technical Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience
Technical core	Technical Education	Technical Elective	Technical Elective or Job Shadowing	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App. or Paid Work Experience

REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS

Edinboro University:
BS - Industrial and Trade Leadership
AS - General Business Administration
BS - Business Administration
AS - Computer Information Processing Technology
BS - Computer Science
BS - Economics

Gannon University:
BS - Marketing
BS - Industrial Distribution

Mercyhurst College:
AS - Materials Management
CT - Production & Inventory Control Technician
CT - Purchasing Technician
CT - Sales Specialist
AS - Sales Management

Penn State University:
BS - Marketing
BS - Marketing & International Business

* Contact the guidance counselor for additional training opportunities in this career cluster.

** Contact the local job service office for employment outlook information and employment opportunities in your region.

Career Pathway Course Sequence
Engineering Technology
Cluster* - CIP 15.5999**

Engineering Technology
Generic Pathway

The following courses are suggested in order to meet the secondary academic and vocational-technical preparation requirements to move into a postsecondary training program. Other graduation requirements of your school district can be identified by your high school guidance department. The courses listed below provide a basic core of courses in a sequence that should meet entrance requirements for most postsecondary training programs in this career cluster.

Architectural Technology
Civil Technology
Drafting Technology
Electrical Technology
Electronic Technology
Electromechanical Instrumentation and Maintenance
Environmental Control
Hydraulic Technology
Industrial Production
Quality Control and Safety
Mechanical Drafting and Design Technology
Machine Technology / Mechanical Technology
Metal Working Occupations
Mining and Petroleum Technology
Tool and Die Technology / Welding Technology

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Math	Basic Mathematics	Applied Mathematics I or Basic Mathematics	Applied Mathematics I, Applied Mathematics II or Algebra I	Applied Mathematics II, Algebra I or II or Geometry	Geometry, Algebra II or Trigonometry	Trigonometry or Calculus
English	English	Applied Communications I or English	Applied Communications I or II or English Composition	Business English or Applied Communications II	English Literature or English Composition	Business English or English Composition
Science	General Science	Physical Science or Environmental Science	Earth Science or Physical Science	Applied Biology/Chemistry I or Principles of Technology I	Principles of Technology I or II or Applied Biology/Chem. I or II	Principles of Technology II or Physics I
Social Studies	Social Studies	Social Studies	Civics or World Cultures	Problems of Democracy or World History	Economics or World History	Sociology or Economics
Other	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health	Physical Education/ Health
Technical core	Home Economics	Introduction to Computers	Elective (Consider science)	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective or Youth Apprenticeship
Technical core	Industrial Arts	Industrial Arts or Technical Education	Technical Elective	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App., or Paid Work Experience
Technical core	Technical Education	Technical Elective	Technical Elective or Job Shadowing	Vocational-Technical Elective	Vocational-Technical Elective or Youth Apprenticeship	Vocational-Technical Elective, Youth App., or Paid Work Experience

REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS

Edinboro University of Pennsylvania:
AET - Manufacturing Engineering Technology
AET- Digital Electronics Technology
AET- Biomedical Equipment Technology
BS - Industrial and Trade Leadership
BA - Natural Sciences & Mathematics/Cooperative Engineering
BA - Physics/Cooperative Engineering
BS - Industrial Biochemistry
BS - Environmental Science
BS - Geology

Gannon University:
AS - Electrical Engineering Technology
AS - Mechanical Engineering Technology
AS - Industrial Mechanical Technology
BS - Industrial Management
BS - Electrical Engineering Technology
BS - Mechanical Engineering Technology

Penn State/Behrend College:
AS - Biomedical Equipment Technology
AS - Electrical Engineering Technology
AS - Mechanical Engineering Technology

Erie County Technical Institute:
CT - Electrical Technology
CT - Manufacturing Technology
CT - Plastic Technology

Regional Occupational Skills Center:
CT - Introduction to Plastics

* Contact the guidance counselor for additional training opportunities in this career cluster.

** Contact the local job service office for employment outlook information and employment opportunities in your region.

Career Pathway
Course Sequence Form

Complete this form by writing in your chosen career cluster pathway with its CIP code. Fill in the subject boxes with your chosen courses. Then meet with your high school guidance counselor to complete your schedule.

Career Pathway for ____________________
Student Name

My career interest area(s): ____________________

Career Pathway ____________________

Course Sequence ____________________ **Technology Cluster - CIP** ____________________

SUBJECT	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12	REGIONAL POSTSECONDARY CERTIFICATION / DEGREE PROGRAMS
Math							**These are the postsecondary programs that I will consider for further training after graduation.** ____________________ ____________________ ____________________ ____________________ ____________________ ____________________ ____________________ ____________________ ____________________
English							
Science							
Social Studies							
Other							
Technical core							
Technical core							
Technical core							

What about an Articulation Agreement?

Now that you have identified a career pathway cluster, look at the lower left hand corner to see if one of these postsecondary schools is listed. If so, an articulation agreement may be in place that can help you move easily from high school to college training. Articulation agreements may change from year to year. It is best to contact the school directly and ask if the agreement is still in place. New agreements may have recently been signed and are not listed here. Ask your guidance counselor or your chosen postsecondary school about these possible agreements.

For further information about the status of articulation agreements, call:

Edinboro University of Pennsylvania
School of Science, Management and Technology
Phone: (814) 732-2400

Gannon University
Department of Engineering Technology
Phone: (814) 871-7618

ACKNOWLEDGMENTS

TRI-COUNTY TECH PREP CONSORTIUM MEMBERS:

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FUNDS TO SUPPORT TECH PREP AND SCHOOL TO WORK ARE PROVIDED BY:
PA DEPARTMENT OF EDUCATION
BUREAU OF VOCATIONAL-
TECHNICAL EDUCATION
333 MARKET STREET
HARRISBURG PA,17126-0333
(717) 787-5293

School Districts

Conneaut School District
Crawford Central School District
Corry School District
Erie City School District
Fairview School District
Fort LeBoeuf School District
Iroquois School District
General McLane School District
Girard School District
Harbor Creek School District
Millcreek Township School District
North East School District
Northwestern School District
PENNCREST School District
Union City School District
Warren School District
Wattsburg School District

Corry AVTS
Crawford County AVTS
Erie City AVTS
Erie County Technical School
Warren County Career Center

Post Secondary Institutions

Edinboro University of Pennsylvania
Erie County Technical Institute
Gannon University
Mercyhurst College
Pennsylvania State University/Behrend
Regional Occupational Skills Center

Community and Industry

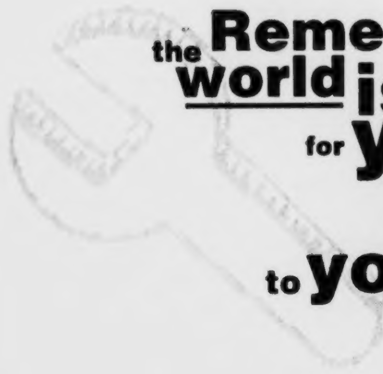
Economic Development Corp. of Erie County
Private Industry Council of Erie County
NW PA Industrial Resource Center

AVTS' Advisory Councils
NW PA Training Partnership Consortium, Inc.
National Institute of Flexible Manufacturing
Erie Chamber of Commerce

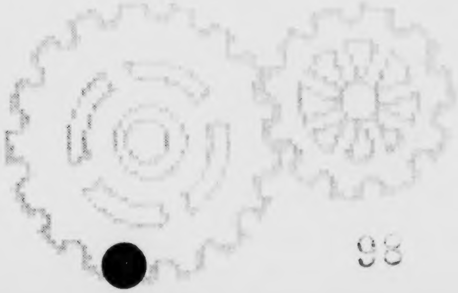
BEST COPY AVAILABLE

Now that you've come this far...

Here are some additional ways to gather career information:



Remember, the world is waiting for you. It's up to you. be ready for the world!



- **Research**

  your chosen career pathway using one of the computerized career guidance programs available in your high school guidance office. Some of these programs may be available for your use:

  Discover
  Sigi Plus
  Plato
  Choices
  COIN
  ACCESS

- **Visit**

  your local Job Service office. Talk to the employment counselors there. Review their employment information that relates to the career pathway you have chosen.

- **Talk**

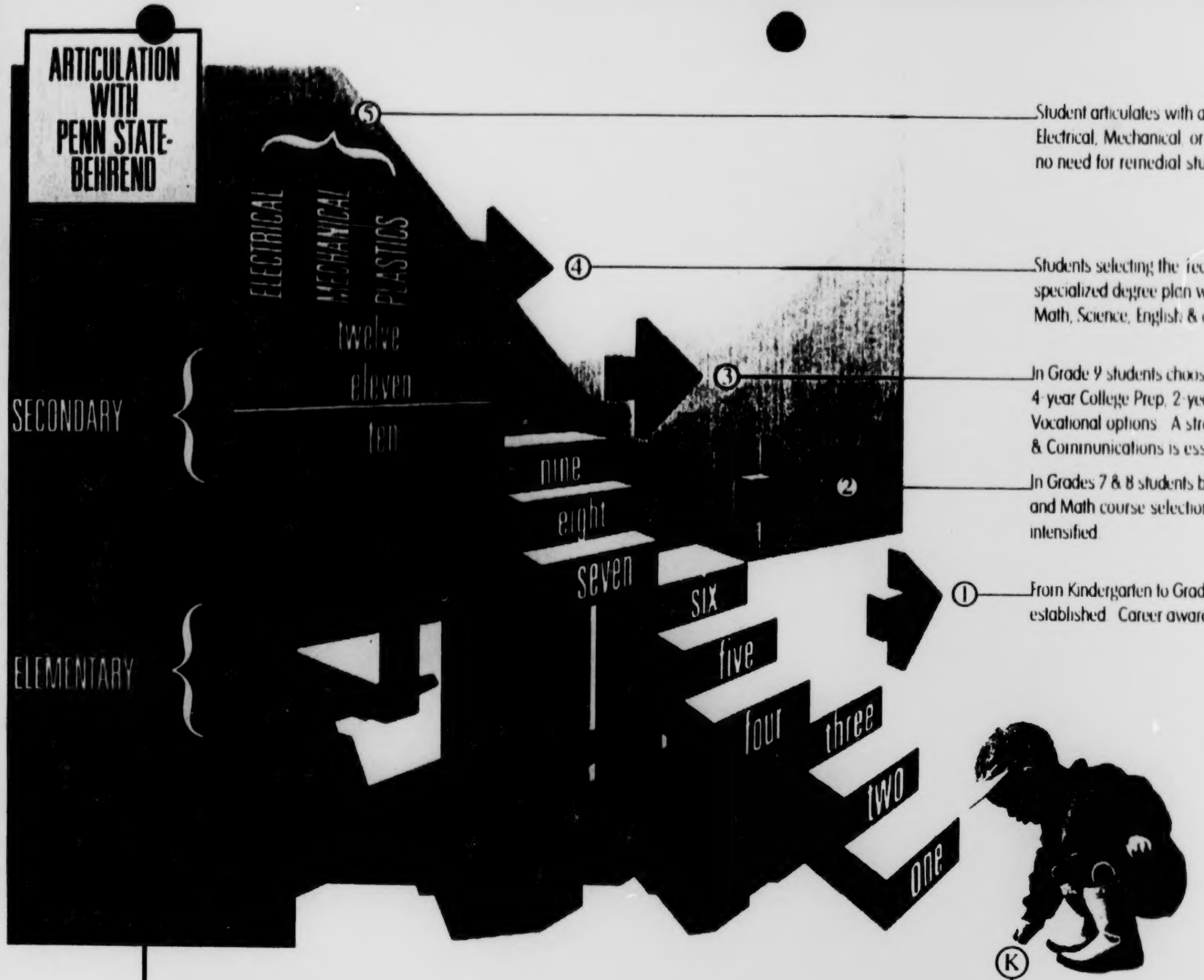
  to your guidance counselor about job shadowing opportunities in your pathway. Job shadowing is scheduled time that you spend talking with and observing adults employed in your chosen career pathway.

- **Visit**

  the public library and local bookstores and review books related to your career pathway. They also have books that help you learn how to research careers.

- **Talk**

  to the adults that you respect about their careers. Ask them how they achieved their career goals. They can give you real-life experiences about the job world.



⑤ Student articulates with a PSU Associate Degree program in Electrical, Mechanical or Plastics Engineering Technology with no need for remedial studies

④ Students selecting the Tech Prep option in Grade 9 pursue a specialized degree plan which meets PSU prerequisites in Math, Science, English & career related areas, i.e. CAD

③ In Grade 9 students choose a career pathway, selecting from 4-year College Prep, 2-year Associate Degree Tech Prep, or Vocational options. A strong foundation in Math, Science, & Communications is essential

② In Grades 7 & 8 students begin to specialize the Science, English, and Math course selections. Career awareness efforts are intensified

① From Kindergarten to Grade 6 a foundation of basic skills is established. Career awareness is part of the curriculum

TECH PREP

CHRONOLOGY OF EVENTS
GRADES K-14

TRI-COUNTY TECH PREP CONSORTIUM

Career Pathway Course Sequence Agreement between
Warren County School District and
Penn State Erie, The Behrend College
Associate Degree Program in Plastics Engineering Technology (2PLET)--CIP 15-0607

This degree pathway prepares students for eventual employment in occupations such as: Process Technician, Field Service Engineer, Laboratory Technician, Account Manager, Technical Sales Engineer, and Quality Control Technician.

Recommended Plastics Engineering Technology Pathway

The attached course sequences reflect the recommended sequences designed to meet the secondary academic and vocational-technical preparation necessary to articulate with the Penn State-Behrend associate degree program in plastics engineering technology (2PLET). Specific graduation requirements can be determined in conjunction with your high school guidance department.

There are many different course combinations that meet the articulation prerequisites. In most cases the sequences represent the minimum requirements within a curriculum area; however, you are encouraged to take more rigorous sequences when available. The more rigorous the course sequences you complete at the secondary level, the better your chances for success at the college level, especially in the mathematics, science, and technical areas. You can complete the associate program in two years if you go full time and in five years if you go part time.

Copies of the following are attached: potential math sequences at the secondary level; full- and part-time program completion sequences, precompetencies for math, physics, and English; and general notes for sequencing.

How to use the course planning matrix

Meet with your guidance counselor as early as possible to identify the sequence of courses that you think you could successfully complete in each of the curriculum areas. If you wait until 11th or 12th grade to select sequences you will severely limit your pathway options. Once you have identified the required courses in each curriculum area, you can begin to implement your career pathway. Make sure that you work with your guidance counselor so all of your graduation requirements are met.

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What does "articulation" mean?

Articulation means that Penn State-Behrend has identified criteria for admission to the 2PLET program and has worked with secondary school personnel to develop a sequence of courses that will prepare you to enter the program. Ideally this means that upon high school graduation you should have an adequate academic background for the 2PLET and should not have to take any remedial courses prior to entering the program. If you complete the recommended course sequences successfully, you will meet the admission requirements for the 2PLET and Penn State has agreed to offer you direct admission into one of its engineering technology associate programs and into the 2PLET on a space available basis. In addition, if you choose to take more rigorous courses at the secondary level, you may be eligible to test out of certain college courses.

Warren County School District
Tech Prep Plastics Engineering Technology Program
Program Specific-Articulated Course Scope and Sequence with Penn State Erie, The Behrend College

Subject	Warren County School District Academic Course Requirements Technical Core Completed at Warren County Career Center or H S Tech Ed Program			
	Grade 9	Grade 10	Grade 11	Grade 12
Math	Applied Math Algebra I (120) Geometry (120)	Applied Math Geometry Algebra II	Applied Math Algebra II Trig/Statistics	Algebra II or Trigonometry Trig/Statistics Elem Functions
English	Applied Comm 9 or English 9 (120)	Applied Comm 10 or English 10 (120)	Applied Comm 11 or English 11 (120)	Humanities (120)
Science	Science 9 (120) and Environmental Science (60)	Applied Biology or Academic Biology (120)	Applied Chemistry or Academic Chemistry (120)	Physics (120) or Principles of Technology
Social Studies	Non-Western Cultures (120)	U S History (120)	Modern World History (120)	Government (60) Economics (60)
Other	Phys Ed (30) First Aid (15) Career Aware (8) Library Media (4)	Phys Ed (30) On-line (10) Careers (20) Health (60)	Phys Ed (30)	Phys Ed (30)
Tech Core	Note Skills (60) Prac Comp (60)	Prac Comp (60) Elective (60)	Drafting/CAD	Drafting/CAD
Tech Core	Elective	Elective	Drafting/CAD	School to Work Internship

Penn State Erie Articulated Associate Degree Program in Plastics Engineering Technology 68 Credits						
Year 13			Year 14			
Course #	Course Title	# of Credits	Course #	Course Title	# of Credits	Total # of Credits
CMPSC 101	FORTRAN	16	CHEM 012	Chemical Principles	16	32
IE T 101	Manu Materials & Processes		EG T 201	Advanced CAD		
EG T 101	Technical Drawing Fund		MCH T 213	Strength & Prop of Materials		
EG T 102	Introduction to CAD		PL ET 205	Introduction to Plastics		
ENGL 015	Rhetoric & Composition		PL ET 217	Plastics Processing I		
MTHBD 091	Technical Mathematics		PL ET 234	Princ of Plastics Proc Equipment		
EG T 114	Spatial Analysis & CAD	18	CHEM 014	Experimental Chemistry	18	36
MCH T 111	Tech Mechanics Statics		PL ET 270	Plastics Processing II		
PHYS 150	Technical Physics		SPCOM 100	Effective Speech		
S/H/A	Elective		Q C 200	Quality Control for Plastics		
MTHBD 092	Tech Math & Calculus		S/H/A	Elective		
			S/H/A	Elective		
			PL ET 206W	Plastic Material & Properties		
						68

NOTES FOR SEQUENCING OF HIGH SCHOOL COURSES (2 PLET ASSOCIATE PROGRAM)

1. **Math**: requirement includes one unit of algebra and one unit of either advanced algebra, solid geometry, or trigonometry.

   Preferred: at least through trigonometry

2. **English**: requirement includes one unit of composition, one unit of literature, and two other units

3. **Science**: requirement includes two units.

   Preferred: at least one unit of chemistry

4. **Computer Skills**: no requirement

   Preferred: advanced word processing, advanced spread sheet and database management, and desktop publishing

5. **Career Specific Skills**: no requirement

   Preferred: courses related to design and drafting, computer-aided design, industrial manufacturing technology, materials, and other appropriate manufacturing-related coursework

6. **Other Requirements**: includes five units, consisting of foreign language, social studies, arts, and humanities

7. **Opportunities for Course Credit and Waiver**

- Penn State does not accept credit for course work completed at the high school level

- CLEP (College-Level Examination Program) and Advanced Placement examinations are available for the following courses

• Computer Science 101	(3 credits)
• Humanities	(3 credits)
• Science (Chemistry 012 & 014)	(4 credits)
• Arts	(3 credits)
• Social Sciences	(3 credits)
Total	16 credits

- Undergraduate Proficiency Examination for placement and credit is available for chemistry (4 credits)

- Please contact the College for questions regarding mathematics testing

- Students may attempt to test out a course (and receive credit) by taking course final exam

- Credit waivers are not anticipated

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PENN STATE ERIE
PLASTICS ENGINEERING TECHNOLOGY
(2PLET, Associate in Engineering Technology Degree)
*68 Credits ***Proposed****

SEQUENCING FOR FULL-TIME STUDENTS

Fall Semester - Freshman Year

CMPSC	101	(3 3 0)	Introduction to Algorithmic Processes (FORTRAN)
EG T	101	(1 0 2)	Technical Drawing Fundamentals
	102	(1 0 2)	Introduction to Computer-Aided Drafting
ENGL	015	(3 3 0)	Rhetoric and Composition
IE T	101	(3 2 3)	Manufacturing Materials and Processes
MTHBD	091	(5 5 0)	Technical Mathematics
		16 credits	

Spring Semester - Freshman Year

EG T	114	(2 1 3)	Spatial Analysis & Computer-Aided Drafting
MTHBD	092	(5 5 0)	Technical Mathematics & Calculus
MCH T	111	(3 3 0)	Technical Mechanics - Statics
PHYS	150	(3 2 2)	Technical Physics
S H A	Elective	(3 3 0)	Select from University General Education List
		16 credits	

Fall Semester - Sophomore Year

CHEM	012	(3 3 0)	Chemical Principles
EG T	201	(2 1 2)	Advanced Computer-Aided Drafting
MCH T	213	(3 3 0)	Strength & Properties of Materials
PL ET	205	(3 3 0)	Introduction to Plastics
PL ET	217	(3 1 6)	Plastics Processing I
PL ET	234	(4 3 2)	Principles of Plastic Processing Equipment
		18 credits	

Spring Semester - Sophomore Year

CHEM	014	(1 0 3)	Experimental Chemistry
PL ET	270	(3 1 6)	Plastics Processing II
PL ET	206W	(3 2 2)	Plastic Materials and Properties
Q C	[illegible]	(2 2 0)	Quality Control for Plastics Processing
SPCOM	100	(3 3 0)	Effective Speech
S H A	Elective	(3 3 0)	Select from University General Education List
S H A	Elective	(3 3 0)	Select from University General Education List
		18 credits	

For the associate degree in Plastics Engineering Technology, students are required to have completed 9 credits in Social Science/Humanities/Arts electives and to have fulfilled the Cultural Diversity and Writing Across the Curriculum requirements.

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PENN STATE ERIE
PLASTICS ENGINEERING TECHNOLOGY
(2PLET, Associate in Engineering Technology Degree)
*68 credits ***Proposed****

SEQUENCING FOR PART-TIME STUDENTS[1]

Fall Semester - Year One

MATH	081	(3:3:0)	Technical Mathematics I
ENGL	015	(3:3:0)	Rhetoric and Composition
		6 credits	

Spring Semester - Year One

MATH	082	(3:3:0)	Technical Mathematics II
IE T	101	(3:2:3)	Manufacturing Materials and Processes
		6 credits	

Fall Semester - Year Two

MATH	083	(4:4:0)	Technical Calculus
EG T	101	(1:0:2)	Technical Drawing Fundamentals
	102	(1:0:2)	Introduction to Computer-Aided Drafting
		6 credits	

Spring Semester - Year Two

EG T	114	(2:1:3)	Spatial Analysis & Computer-Aided Drafting
CMPSC	101	(3:3:0)	Introduction to Algorithmic Processes (FORTRAN)
		5 credits	

Fall Semester - Year Three

CHEM	012	(3:3:0)	Chemical Principles
PL ET	205	(3:3:0)	Introduction to Plastics
		6 credits	

Spring Semester - Year Three

PHYS	150	(3:2:2)	Technical Physics
MCH T	111	(3:3:0)	Technical Mechanics - Statics
		6 credits	

Fall Semester - Year Four

PL ET	217	(3:1:6)	Plastics Processing I
PL ET	234	(4:3:2)	Principles of Plastic Processing Equipment
		7 credits	

Spring Semester - Year Four

PL ET	27[illegible]	(3:1:6)	Plastics Processing II
Q C	20[illegible]	(2:2:0)	Quality Control for Plastics Processing
		5 credits	

Fall Semester - Year Five

MCH T	213	(3:3:0)	Strength & Properties of Materials
EG T	2[illegible]	(2:1:2)	Advanced Computer-Aided Drafting
		5 credits	

Spring Semester - Year Five

PL ET	2[illegible]W	(3:2:2)	Plastic Materials and Properties
SPCOM	[illegible]	(3:3:0)	Effective Speech
		6 credits	

Three Social/Science/Humanities/Arts courses (9 credits) and Chemistry 14 (1 credit) must be completed during summer sessions. Students must fulfill the Cultural Diversity and Writing Across the Curriculum requirements.

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POTENTIAL SECONDARY SCHOOL MATH SEQUENCES FOR TECH PREP ARTICULATION WITH ASSOCIATE PROGRAMS IN ENGINEERING TECHNOLOGY AT PENN STATE ERIE

Each sequence provides for an acceptable transition to one of Penn State Erie's associate programs in engineering technology, including electrical, mechanical, and plastics. The sequences are arranged from the least rigorous to the most rigorous, with 10 being the most rigorous. Required courses include one unit of algebra and one unit of either advanced algebra, plane geometry, or trigonometry. A sequence including at least trigonometry (sequences 4, 6, 7-10) is preferred.

SEQUENCE	**GRADE LEVEL**				
	8	**9**	**10**	**11**	**12**
(1)	General Math	Applied Math	Applied Math	Applied Math	Algebra II
(2)	Applied Math	Applied Math	Applied Math	Algebra I	Algebra II
(3)	Applied Math	Applied Math	Applied Math	Algebra II	Geometry
(4)	Applied Math	Applied Math	Applied Math	Algebra II	Trigonometry
(5)	Applied Math	Applied Math	Algebra I	Algebra II	Geometry
(6)	Applied Math	Applied Math	Algebra I	Algebra II	Trigonometry
(7)	Applied Math	Applied Math	Algebra II	Geometry	Trigonometry
(8)	Pre-Algebra	Algebra I	Algebra II	Geometry	Trigonometry
(9)	Algebra I	Algebra II	Geometry	Trigonometry	Pre-Calculus
(10)	Algebra I	Algebra II	Geometry	Trigonometry	Calculus

POTENTIAL SECONDARY SCHOOL SCIENCE SEQUENCES FOR TECH PREP ARTICULATION WITH ASSOCIATE PROGRAMS IN ENGINEERING TECHNOLOGY AT PENN STATE ERIE

Each sequence provides for an acceptable transition to one of Penn State Erie's associate degree programs in engineering technology, including electrical, mechanical, and plastics. The sequences are, in general, arranged from the least rigorous to the most rigorous, with 12-14 being the most rigorous. Requirements include at least two units of science. A sequence including physics (for mechanical and electrical engineering technology) or chemistry (for plastics engineering technology) is preferred. This is not an all inclusive list of sequences.

SEQUENCE	GRADE LEVEL			
	9	10	11	12
(1)	Earth, Environmental, or Physical Science	Applied Bio/Chem	Applied Bio/Chem	Principles of Technology
(2)	Earth, Environmental, or Physical Science	Principles of Technology	Principles of Technology	Applied Bio/Chem
(3)	Earth, Environmental, or Physical Science	Principles of Technology	Principles of Technology	Chemistry
(4)	Earth, Environmental, or Physical Science	Principles of Technology	Principles of Technology	Biology
(5)	Earth, Environmental, or Physical Science	Principles of Technology	Principles of Technology	Physics
(6)	Earth, Environmental, or Physical Science	Biology	Applied Bio/Chem	Principles of Technology
(7)	Earth, Environmental, or Physical Science	Biology	Principles of Technology	Principles of Technology
(8)	Earth, Environmental, or Physical Science	Biology	Chemistry	Physics
(9)	Biology	Chemistry	Physics	AP Physics
(10)	Biology	Chemistry	Physics	AP Biology
(11)	Biology	Chemistry	Physics	AP Chemistry
(12)	Biology	Chemistry	AP Biology	AP Physics
(13)	Biology	Chemistry	AP Chemistry	AP Biology
(14)	Biology	Chemistry	AP Chemistry	AP Physics

MINIMUM REQUIREMENTS FOR ACCEPTANCE INTO PENN STATE-BEHREND'S

Tech Prep-Articulated Associate Degree Programs
in
Engineering Technology

1. Graduation from an accredited secondary school.

2. Successful completion of the prescribed Tech Prep course scope and sequence, including:

    - four units of English, including one unit of composition, one unit of literature, and two additional units

    - two units of mathematics, including one unit of algebra, and one unit of either advanced algebra, solid geometry, or trigonometry

    - two units of science

    - five units of arts/humanities/social studies/foreign languages

3. Completion of the SAT or ACT

PREREQUISITE COMPETENCIES

FOR

- ENGLISH
- MATHEMATICS
- PHYSICS

Prerequisite competencies were completed for the three major areas of study only: English, mathematics, and science (physics).

Prerequisite Competencies
English 15

MINIMUM COMPETENCIES NEEDED FOR FRESHMAN COMPOSITION

Following is a list of minimum competencies required of students entering freshman composition, a writing course included in the course of study of the two-year engineering technology and business administration programs offered by The Pennsylvania State University.

This description is divided into three parts:

Section 1: Competencies—descriptors of writing skill—needed by students entering freshman composition;

Section 2: A sample essay;

Section 3: A critique of the essay in Section 2 based on the descriptors listed in Section 1.

Section 1: Competencies—Descriptors of Writing Skills—Needed by Students Entering Freshman Composition

Successful writers demonstrate control of the four components of written communication: content, organization, language, and usage and mechanics.

Entering college freshmen should be able to do the following to demonstrate readiness for freshman composition:

CONTENT

1. Limit a topic to a central idea.
2. Focus on a central idea that is pursued throughout the writing.
3. Employ valid reasoning.
4. Use a tone appropriate to the topic, audience, and purpose.
5. Provide substantive detail that supplies sufficient, vivid, apt, and relevant evidence to support the central idea.
6. Accommodate a particular audience; i.e., produce writing that is tailored to a particular audience.
7. Demonstrate an awareness of differences among and appropriate use of narration, description, exposition, and augment/persuasion.

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ORGANIZATION

8. Create a piece of writing that has an identifiable beginning, middle, and end.

9. Create an introduction and a conclusion that are appropriate for the topic, audience, and purpose of the writing.

10. Write an introduction and a conclusion that are proportionate in length to the rest of the writing.

11. Create and follow an identifiable organizational plan/framework (an arrangement of ideas) that is appropriate to the content, purpose, and audience.

12. Employ transitions and other coherence devices and techniques that are sufficient and effective to enable the reader to understand the direction and grasp the structure of the writing: *orienting statements, forecasting statements, transitional words and phrases, word repetition, synonyms, patterns of expectation.*

LANGUAGE

13. Write sentences that are grammatically complete (avoid fragments, run-on/fused sentences); i.e., write sentences with boundaries that are correct.

14. Write sentences that reflect a familiarity with a variety of sentence patterns.

15. Write sentences that reflect a familiarity with a variety of structural elements: *dependent clauses, verbals, appositives.*

16. Choose words that are appropriate for the rhetorical situation, correct, precise, and varied.

USAGE AND MECHANICS

17. Employ usage that conforms to the conventions of accepted written American English: *word usage, common idiomatic elements in the language, subject-verb agreement, appropriate tense, noun-antecedent agreement, accurate use of sentence syntax.*

18. Employ mechanics that conform to the conventions of accepted written American English: *punctuation, capitalization, abbreviation.*

19. Use accurate spelling.

20. Employ a format that adheres to the standard basic rules of manuscript form.

Section 2: Sample Essay

A Golden Moment

[1]It was the sale of a beautiful gold coin that lead to the proudest moment of my life. [2]It was a cool August evening in Centerville, Pennsylvania. [3]As I opened the door to the banquet hall of the Holiday Inn, located in Centerville, the distinct smell of money filled the air. [4]The sale of A– S–, a well known coin collector, was about to begin. [5]I stood in the entrance to the banquet room and looked around to see if I knew any of the hundred famous coin collectors who had come to the sale hoping to find a bargain. [6]One of the coin collectors I knew was D– S–, the owner of S– Coins and Currency. [7]D– had a smile on his face when I seen him, probably because he knew he would be able to afford the most expensive gold coin. [8]This expensive gold coin was an 1884 ten dollar piece in beautiful condition and was expected to bring around $16,000. [9]When I went over to say hello to D–, his beady green eyes focused on me. [10]After we said hello to each other I found a seat for the sale. [11]I began to study D–'s brown hair, clear complexion, and masculine body; I wished that when I became 27 in 11 years I would be as successful as he is. [12]As the sale started I examined the list of coins and the shape they were in. [13]The first coin sold for $835. [14]I thought I would never be able to buy more than one coin at this price. [15]However, the next coin was only up to $405. [16]It was an 1874 five dollar gold piece and I knew it was worth more than that. [17]I bid on the coin for $500 and luckily got the coin. [17]The third was an 1893 five dollar gold piece and I opened the bidding at $445. [19]D– S– then bid on the coin for $475. [20]As he turned around and smiled at me I bid $480. [21]Suddenly, I noticed D– didn't bid again, so I got the coin for $480. [22]D– said to me, "I left you have coin so you better let me have one or two." [23]That moment remains as the proudest moment in my life because having D– S– talk to me during a sale made me feel like I was the biggest person in the room. [24]D– did buy the most expensive coin. [25]It was an 1884 gold piece and it sold for $17,850, which was a fairly cheap price for such a rare coin. [26]The sale ended and all I had in my hand was two gold coins, but I had had the biggest moment of my life that evening.

Section 3: A Critique of the Essay in Section 2 Based on the Descriptors Listed in Section 1.

The following critique of the essay "A Golden Moment" is based on the descriptors listed in Section 1: "Descriptors of Writing Skills Needed by Students Entering Freshman Composition":

CONTENT

1. Limit a topic to a central idea.

   Sentence #1 announces the topic that establishes the subject and its controlling idea.

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2. Focus on a central idea that is pursued throughout the writing.

   Sentence #1 announces the topic that is developed throughout the paper.

3. Employ valid reasoning.

   The essay provides evidence that substantiates the conclusion and evaluation stated in Sentence #1 and echoed in Sentence #25.

4. Use a tone appropriate to the topic, audience, and purpose.

   The tone of respect for the hobby of coin collecting and for the master coin collector is appropriate.

5. Provide substantive detail that supplies sufficient, vivid, apt, and relevant evidence to support the central idea.

   Details are substantive and appropriate: for example, description of the coin in Sentence #7, description of D— S— in Sentence #10.

6. Accommodate a particular audience; i.e., produce writing that is tailored to a particular audience.

   The essay is directed to a general, non-specialist audience: note the explanation of who D-- S— is and the descriptions detailing why particular coins are especially valuable.

7. Demonstrate an awareness of differences among and appropriate use of narration, description, exposition, and augment/persuasion.

   The essay is a narrative with descriptive support and an appropriate underpinning of persuasion.

ORGANIZATION

8. Create a piece of writing that has an identifiable beginning, middle, and end.

   Beginning: Sentence #1
   Middle: Sentences #2 through 24
   End: Sentence #25

9. Create an introduction and a conclusion that are appropriate for the topic, audience, and purpose of the writing.

   Introduction
   Sentence #1 announces the subject and the particular topic of the essay.
   Sentence #2 identifies time and place.
   Sentences #3 and #4 announce the particular time and occasion.

   Conclusion
   Sentence #26 brings the narrative to a close and echoes the key idea of the essay.

10. Write an introduction and a conclusion that are proportionate in length to the rest of the writing.

    Introduction: 4 of 26 sentences; 65 words out of 458 total words

    Conclusion: 1 sentence of 26 sentences; 26 out of 458 total words

11. Create and follow an identifiable organizational plan/framework (an arrangement of ideas) that is appropriate to the content, purpose, and audience.

    The plan, with details ordered chronologically, is appropriate to relate this "moment" in the writer's life.

12. Employ transitions and other coherence devices and techniques that are sufficient and effective to enable the reader to understand the direction and grasp the structure of the writing: *orienting statements, forecasting statements, transitional words and phrases, word repetition, synonyms, patterns of expectation*.

    Sentence #1 announces the topic, which is pursued throughout the essay.

    Effective transitional words and phrases:
        Sentence #3: "As I opened ..."
        Sentence #10: "After we said hello ..."
        Sentence #12: "As the sale started ..."
        Sentence #15: "However"
        Sentence #19: "then"
        Sentence #20: "As he turned around and smiled ..."
        Sentence #21: "Suddenly"
        Sentence #26: "but"

    Effective repetitions: "coin collector," "D—", "coin," "piece"

    Effective synonyms: *pronouns* throughout the essay; "coin" and "gold piece"; "proudest moment" and "biggest moment."

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13. **Write sentences that are grammatically complete (avoid fragments, run-on/fused sentences); i.e., write sentences with boundaries that are correct.**

    All sentences are grammatically complete.

    Fragments: none

    Run-on/fused sentences: none

14. Write sentences that reflect a familiarity with a variety of sentence patterns.

    Sentences by Patterns - Effective variety
    Subject-verb: #5, #26 (first main clause)
    Subject-verb-direct object: #1 (cleft sentence), #3, #7, #10, #11, #12, #13, #14, #16 (second main clause), #17, #19, #20, #21, #22, #23, #24, #26 (third main clause)
    "Be" verb: #2, #4, #5, #8, #15, #16 (first main clause), #18, #25, #26 (second main clause)

    Sentences by Grammatical Structure - Effective variety
    Simple: #2, #4, #8 (with compound predicate), #13, #15, #17 (with compound predicate), #24
    Compound: #18, #19
    Complex: #1, #3, #5, #6, #7, #9, #10, #12, #14, #20, #22, #23
    Compound-complex: #11, #16, #21, #25, #26

15. Write sentences that reflect a familiarity with a variety of structural elements: *dependent clauses, verbals, appositives.*

    The essay demonstrates a mastery of a variety of structural elements, particularly dependent clauses and verbal constructions, many of which are embedded within other dependent clauses and other verbals.

    Dependent clauses: 25 total

    Adjectival: #1, #5, #6 (with "that" deleted), #12 (with "that" deleted), #25, #26 (with "that" deleted)
    Adverbial: #3, #5, #7 (2 clauses), #9, #10, #11 (2 clauses, one of which is elliptical), #12, #20, #22, #23 (2 clauses)
    Nominals: #7, #11, #14, #16 ("that" deleted), #21 ("that" deleted)

Verbals: 16 total

Gerunds: #18, #23
Participles: #3, #4, #5
Infinitives:
    Nominals: #5, #11, #22 (2 nominal infinitives, both with "to" deleted), #23 (with "to" deleted)
    Adverbials: #4, #5, #7, #8, #9, #14
    Adjectivals: none

Appositives: #4, #6

16. Choose words that are appropriate for the rhetorical situation, correct, precise, and varied.

Word choice is varied and appropriate. There are 193 different words in the essay, which totals 458 words.

The metaphor/pun ("golden") in the title reflects the writer's ability to employ figurative language effectively.

However, in two instances the connotative meaning is inappropriate: #9 ("beady"), #25 ("cheap").

USAGE AND MECHANICS

17. Employ usage that conforms to the conventions of accepted written American English: *word usage, common idiomatic elements in the language, subject-verb agreement, appropriate tense, noun-antecedent agreement, accurate use of sentence syntax.*

Usage throughout the essay shows mastery of the conventions of accepted written American English. There are several errors, none of them serious enough to compromise the overall quality of the essay: #1 ("lead" for "led"), #7 ("seen" for "saw"), #8 ("around" for "about"), #13 ("this" for "that"), #15 (misplacement of "only"), #23 ("like" for "as if").

Variety in sentence syntax reflects a good command of the structures of American English.

18. Employ mechanics that conform to the conventions of accepted written American English: *punctuation, capitalization, abbreviation.*

The punctuation throughout the essay is generally sound, although there are several recurring errors: use of the hyphen for compound adherent adjectives (#4, #8, #16, #17), use of the comma to separate an introductory construction containing a verb form (#10, #12, #20), and use of the comma along with a coordinate conjunction to join main clauses (#16, #18, #25, #26).

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All occurrences of capitalization and abbreviation are correct in the essay.

19. Use accurate spelling.

All words are spelled correctly.

20. Employ a format that adheres to the standard basic rules of manuscript form.

Title is centered.

Indentation denotes paragraph.

Short Form
Prerequisite Competencies
Math 21 & 81

The student should have the necessary knowledge and skills to enable him/her to:

1. Compute the area, perimeter and other relevant quantities for basic two-dimensional figures, e.g. . rectangles, triangles, circles.
2. Compute the surface area and volume of right rectangular solids and spheres.
3. Add subtract, multiply and divide real numbers including whole numbers, integers, rational numbers R's, mixed numbers, decimals and numbers expressed in scientific notation.
4. Be able to compute powers and roots of whole numbers and integers.
5. Be able to reduce rational numbers to lowest terms.
6. Be able to convert between mixed numbers and improper fractions.
7. Be able to simplify complex fractions.
8. Be able to solve word problems involving whole numbers, integers, rational numbers and decimals.
9. Be able to convert between rational numbers, decimals and percent.
10. Be able to round whole numbers and decimals.
11. Be able to use and simplify ratios and rates.
12. Be able to solve proportions.
13. Be able to solve word problems involving proportions, percent increase and decrease.
14. Be able to solve word problems involving graphs.
15. Be able to convert within and between the English and metric systems of measurement.
16. Be able to solve word problems involving measurement.
17. Be able to evaluate algebraic expressions involving integers and rational numbers.
18. Be able to simplify algebraic expressions.
19. Be able to solve linear equations.
20. Be able to solve word problems which reduce to linear equations.
21. Be able to graph linear equations.
22. Be able to find slopes and equations of lines.
23. Be able to solve linear equations involving absolute values.
24. Be able to solve linear inequalities.
25. Be able to solve linear inequalities involving absolute values.
26. Be able to solve systems of two linear equations in two unknowns.
27. Be able to solve word problems which reduce to a system of two linear equations in two unknowns.
28. Be able to use the properties of positive integral exponents.
29. Be able to add, subtract, multiply and divide polynomials (including long division).
30. Be able to factor polynomials using common factors, special products, grouping and trinomial factoring.
31. Be able to solve nonlinear equations using factoring.

Note. The following 5 pages contain exemplars for Math 21 and 81 competencies.

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Prerequisite Competencies for Math 21 & Math 81

The following list of entrance competencies has been prepared by the Tech Prep Steering committee and carefully reviewed by the Mathematics department of Penn State University. Students entering the associate degree in business must complete Math 21. Students in the engineering technology programs must complete a math sequence beginning with Math 81.

In order to provide a seamless transition to subsequent course work at the college level, the tech prep articulation provides that high school teachers certify that these skills have been mastered. Students may assemble a portfolio of representative skills that they have mastered.

1. The student must be able to compute the area, perimeter and other relevant quantities for basic two-dimensional figures, e.g. rectangles, triangles, circles.
   Exemplar: Given the length and the height of a triangle, find the perimeter and the area.

2. The student must be able to compute the surface area and volume of right rectangular solids and spheres.
   Exemplar: Given the radius and height of a cylinder, compute the volume of air the cylinder can contain and the amount of metal required to cover the surface area of the cylinder.
   Additional practice in computing surface area and volume of cubes, boxes, spheres.

3. The student must be able to add subtract, multiply and divide real numbers including whole numbers, integers, rational numbers, mixed numbers, decimals and numbers expressed in scientific notation.
   Exemplar: *Add* $3.4 \times 10^{7} + 5.63 \times 10^{6}$
   Divide $7\,{}^{1}/_{4}$ by $1\,{}^{2}/_{3}$

4. The student must be able to compute powers and roots of whole numbers and integers.
   Exemplar: Compute 7^3 *and the cube root of 27.*

5. The student must be able to reduce rational numbers to lowest terms.

   Exemplar: Reduce $\frac{124}{40}$ *to lowest terms.*

6. The student must be able to convert between mixed numbers and improper fractions.

   Exemplar: Convert $25\frac{4}{5}$ *to an improper fraction.*

   Convert: $\frac{129}{5}$ *to a mixed number*

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Prerequisite Competencies for Math 21 & 81 (cont.)

7. The student must be able to simplify complex fractions.

Exemplar: Reduce to lowest terms:

$$\frac{1\frac{1}{2}}{\frac{5}{6}}$$

8. The student must be able to solve word problems involving whole numbers, integers, rational numbers and decimals.

Exemplar: If you are buying a car for $8,575.60 and you can make a down payment of 5% of the purchase price, and taxes are 6% of the purchase price, What is the amount of your loan? If you arrange bank financing for $9\frac{3}{4}$*%, How much interest would you pay each day for the first month of the loan?*

9. The student must be able to convert between rational numbers, decimals and percent.

Exemplar: Convert the following percents to decimal: 5%, 200%, 50%, $\frac{1}{2}$*%*

Express the following as percentages: $\frac{6}{7}$, $1\frac{1}{2}$, *.053, 0.027, 1.5.*

10. The student must be able to round whole numbers and decimals.
Exemplar: Round the following numbers to the nearest tenth:
25.345, 7.89, 56.75, 56.45, 10.92

11. The student must be able to use and simplify ratios and rates.
Exemplar: If you buy an item on sale whose regular cost was $24.00 and received a 20% discount, how much did you save and what was your cost.

12. The student must be able to solve proportions.

Exemplar: Solve for D in the proportion $\frac{8}{21} = \frac{D}{42}$

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Prerequisite Competencies for Math 21 & 81 (cont.)

13. The student must be able to solve word problems involving proportions, percent increase and decrease.
Exemplar: A small rectangle has sides 4 inches by 7 inches. Draw a larger rectangle of the same proportions whose short side is 24 inches. What is the length of the longer side of this rectangle.
Draw a third rectangle that is 40% bigger than the first rectangle.

14. The student must be able to solve word problems involving graphs.
Exemplar: Graph the following data points that show the number of employees on the x-axis and the corresponding number of products produced on the y- axis.
(2,8), (3,12), (5, 20), (10, 40)
How many products are produced with 8 employees?

15. The student must be able to convert within and between the English and metric systems of measurement.
Exemplar: Convert:
34.9 inches to centimeters
5.7 feet to meters
560 meters to kilometers.

16. The student must be able to solve word problems involving measurement.
Exemplar: Measure the dimensions of the floor in the classroom.
How many square tiles 12 inches on edge must you order to cover the floor. How much will the tile cost if you must buy them by the box containing a dozen tiles per box. The cost per box is $12.00

17. The student must be able to evaluate algebraic expressions involving integers and rational numbers.
Exemplar: Evaluate the expression $4x^2 + 3x - 5$ *for* $x = 3/4$

18. The student must be able to simplify algebraic expressions.
Exemplar: Group terms and express in simplest form:
$3(x + 5) - 4x + 5$

19. The student must be able to solve linear equations.
Exemplar: Solve for x: $3x + 2 = 5x - 23$

20. The student must be able to solve word problems which reduce to linear equations.
Exemplar: If a right triangle has height that is two times its width and the area of the triangle is one square foot, what are the width and height. ?

Prerequisite Competencies for Math 21 & 81 (cont.)

21. The student must be able to graph linear equations.
Exemplar: Graph the following : $Y = 5x - 7$

22. The student must be able to find slopes and equations of lines.
Exemplar: What is the slope of the line $Y = 5x - 7$*?*
What are the slope and equation of the line that contains the points $(10,5)$ *and* $(20,10)$

23. The student must be able to solve linear equations involving absolute values.
Exemplar: What are the values of x that satisfy : $|x+5| = 15$

24. The student must be able to solve linear inequalities.
Exemplar: What are the values of x that satisfy: $5x + 3 > 23$

25. The student must be able to solve linear inequalities involving absolute values.
Exemplar: What are the values of x that satisfy : $|x+5| <= 15$

26. The student must be able to solve systems of two linear equations in two unknowns.
Exemplar: What values of x and y satisfy both equations:
$6x - 2y = 14$
$2x + 3y = 12$

27. The student must be able to solve word problems which reduce to a system of two linear equations in two unknowns.
Exemplar: A theater sells tickets at $2.50 for children and $4 for adults. If 375 tickets were sold to one show and $1,398 was collected, how many tickets of each kind were sold?

28. The student must be able to use the properties of positive integral exponents.
Exemplar: Simplify: $(x^3) * (x^5)$
$(x^3) / (x^5)$
$(x^3)^5$

29. The student must be able to add, subtract, multiply and divide polynomials (including long division).
Exemplar: Divide $4x^2 + 3x - 5$ *by* $x - 2$

30. The student must be able to factor polynomials using common factors, special products, grouping and trinomial factoring.
Exemplar: Factor the following: $4x^2 + 8x - 12$

31. The student must be able to solve nonlinear equations using factoring.
Exemplar: What values of x satisfy : $4x^2 + 8x - 12 = 20$

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Prerequisite Competencies
Physics 150

The student should have the necessary knowledge and skills to enable him/her to:

Essential

1. Add, subtract, multiply and divide numbers in scientific notation, by the use of a calculator.
2. Interchange numbers among their fraction, decimal and percent forms.
3. Determine the square and square root of a number, using a calculator.
4. Solve proportions containing a variable.
5. Graph tabled data.
6. Translate word problems into algebraic equations.
7. Manipulate algebraic equations (e.g., solve $y = ax^2 + b$ for x).
8. Evaluate algebraic equations when values for the variables are given.

Helpful, but not essential:

9. Define sine, cosine, and tangent of an angle, in terms of the sides of a right triangle.
10. Calculate the sine, cosine, and tangent of a given angle, using a calculator.
11. Relate the sides of a right triangle by the Pythagorean Theorem.
12. Calculate the slope of a line containing two specified points.
13. Write formulas for perimeter, area and volume of simple geometric figures.

PENNSTATE
Erie
1855
The Behrend College

TECH PREP ARTICULATION AGREEMENT

THIS AGREEMENT is entered into this _____ day of __________________, 19__, by and between the Pennsylvania State University at Erie, The Behrend College (Penn State-Behrend);

and

________________________________, a secondary school with its principal address at ________________________ ____________________________ ("Secondary Institution").

RECITAL

This agreement is to provide a means by which Tech Prep graduates of the Secondary Institution can be better prepared to enter the associate degree Tech Prep programs offered by Penn State-Behrend. The purpose of this Agreement is to ensure that secondary students have successfully completed an approved secondary Tech Prep program and acquired the skills necessary to gain them direct admission into Penn State-Behrend Tech Prep associate degree program(s) in ____, thereby eliminating the need to pursue remedial and/or duplicative courses once enrolled at Penn State-Behrend.

NOW THEREFORE, the parties hereto, intending to be legally bound, agree as follows:

1. Eligibility. All prospective Tech Prep students who have graduated from the Secondary Institution who have successfully completed the necessary academic and technological competencies for their intended program of study and such other requirements as shall be mutually established from time to time, and who enroll in a Penn State-Behrend Tech Prep associate degree program within one academic year following high school graduation.

2. General Terms of the Agreement.

a. Pursuant to the terms of this Agreement, the Secondary Institution and Penn State-Behrend will cooperate in the: (i) development of model Tech Prep programs; (ii) review of current Tech Prep curricula and redesign as appropriate; (iii) development of a marketing plan for the region; and (iv) development of a plan for recruiting and retaining students in the Tech Prep programs of the Secondary Institution and Penn State-Behrend.

b. Pursuant to the terms of this Agreement, Penn State-Behrend will: (i) notify the Secondary Institution immediately of any curriculum changes to this associate degree program that arise from issues relating to accreditation and licensure; and (ii) notify the Secondary Institution of any additional relevant associate degree programs which may become available at Penn State-Behrend.

c. Pursuant to the terms of this Agreement, the Secondary Institution will: (i) encourage enrollment by potential associate degree students in the Tech Prep curriculum at the Secondary Institution; (ii) work to ensure a high degree of successful completion by all students enrolled in the Tech Prep curriculum; and (iii) inform Penn State-Behrend of the enrollment in the Tech Prep program at reasonable intervals as determined by the Secondary Institution and Penn State-Behrend.

An Equal Opportunity University

3. Term of Agreement. This agreement shall continue until terminated by one or both parties. Either party may terminate this Agreement upon reasonable written notice to the other party; provided, however, that no termination of this Agreement shall adversely affect the rights of any student enrolled in the Tech Prep preparatory curriculum.

WITNESS: SECONDARY INSTITUTION

____________________________ By: ____________________________

Director or Superintendent

PENN STATE-BEHREND

____________________________ By: ____________________________

Provost and Dean

PENNSTATE
Erie
1855
The Behrend College

TECH PREP PROGRAM

INTENT TO ENROLL

AND

CERTIFICATION OF COMPLETION

FORM

I, ______________________________, plan to enroll in the Tech Prep program at Penn State-Behrend in the following program: __________________________. I agree to meet or exceed all the competencies listed in the Penn State Tech Prep Reference Manual which are required for my intended area of study.

Student Signature	**Parent/Guardian Signature**
Date	**Parent/Guardian Signature**

This student has met all the requirements for completion of the Tech Prep Associate program

____.

Secondary School Counselor Signature	**Secondary School Principal Signature**
Date	

6/6/96

An Equal Opportunity University

Warren County School District
Tech Prep Manufacturing Engineering Technology Program

Articulated Course Scope and Sequence with Edinboro University of Pennsylvania

Note: This course sequence assumes the incoming student qualifies to receive 12 credits for TD 101 Manufacturing Processes I, TD 102 Manufacturing Processes II, TD 110 Technical Drawing I, and TD 111 Technical Drawing II through articulation.

	Warren County School District Academic and Vocational-Technical Course Requirements Technical Core Completed at Warren County Career Center				Edinboro University Articulated Program AET - Manufacturing Engineering Technology 64 Credit Hours Required for graduation						
Subject	**Grade 9**	**Grade 10**	**Grade 11**	**Grade 12**	**Year 13**			**Year 14**			
					Course #	**Course Title**	**Credits**	**Course #**	**Course Title**	**Credits**	**Total Cr.**
Math	Applied Mathematics I or Algebra I (120)	Applied Mathematics II or Geometry (120)	Algebra I or Algebra II (120)	Math Elective (Trig., Geometry or Pre-Calc.) (120)	General Ed. MA 204 MA 106 or MA 107 MA 112 ES 101 or ES 103	Gen. Ed. Electives College Algebra Trigonometry Pre-Calculus Calculus College Writing Skills Adv. College Writing Skills	 3 3 3 3 3 3	 DS 107** MA 260 CS 117 CS 115 CS 118 CS 214	Gen. Ed. Core Elec. Fundamentals of Speech (**Suggested course) Elementary Statistics Prog. in Basic* PASCAL* FORTRAN "C"* * Select one course	 3 3 3 3 3 3 3	27 credits
English	Applied Com. 9 or English 9 (120)	Applied Com. 10 or English 10 (120)	Applied Com. 11 or English 11 (120)	Humanities (120)							
Science	Science 9 (60) and Environmental Science (60)	Applied Bio/Chem. or Academic Chem. (120)	Principles of Tech. or Academic Chemistry (120)	Physics (120)							
Social Studies	Non Western Cultures (120)	U.S. History (120)	Modern World History (120)	Government (60) Economics (60)	Natural Science	Physics sequence may be started now depending on previous academic record, placement test scores, and advisor's approval.		SP 103 SP 104	Physics I Physics II	4 4	8 credits
Other	Phys. Ed. (30) First Aid (15), Career Aware. (8) Library Media (4) Period. Res. (4)	Phys. Ed. (30) On-line Info. (10) Careers (20) Health (60)	Phys. Ed. (30) Independent Living (60) Elective (30)	Phys. Ed. (30) Parenting (60 Elective (30))	MET Core TD 105	 Engineering Materials (Articulated credits count here)	 3 (11)	 TD 225 +TD elec.	 Statics and Strength of Materials Tool Design Elect.+	 3 3	20 credits
Tech Core	Note. Skills (60) Pract. Comp (60)	Pract. Comp. (60) Elective (60)	MET (Welding Tech.)	MET (Drafting/CAD)							
Tech Core	Foreign Language Elective	Foreign Language Elective	Manufacturing Eng. Tech. (MET) (Machine Tech.)	MET Internship	MET Elec. +TD 310 +TD 370	 Adv. Mold Design+ Motion & Time St.+ + Advanced Tech. Skill Courses	 3 3	 TD 290 TD 296 TD 320	 Independent Study Internship Cost Estimating + Advanced Tech. Skill Courses	 1-6 1-12 3	9 credits 64

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Warren County School District
Tech Prep Drafting/CAD Program

Articulated Course Scope and Sequence with Edinboro University of Pennsylvania

Note: This course sequence assumes the incoming student qualifies to receive 6 credits for TD 110 Technical Drawing I and TD 111 Technical Drawing II through articulation.

Subject	Warren County School District Academic and Vocational-Technical Course Requirements Technical Core Completed at Warren County Career Center				Edinboro University Articulated Program AET - Manufacturing Engineering Technology 64 Credit Hours Required for graduation						
	Grade 9	Grade 10	Grade 11	Grade 12	Year 13			Year 14			
					Course #	Course Title	Credits	Course #	Course Title	Credits	Total Credits
Math	Applied Mathematics I or Algebra I (120)	Applied Mathematics II or Geometry (120)	Algebra I or Algebra II (120)	Math Elective (Trig., Geometry or Pre-Calc.) (120)	General Ed. Core MA 204 MA 106 or MA 107 MA 112 ES 101 or ES 103	Gen. Ed. Electives College Algebra Trigonometry Pre-Calculus Calculus College Writing Skill Adv. College Writing	18 req'd. 3 3 3 3 3 3	DS 107** MA 260 CS 117 CS 115 CS 118 CS 214	Gen. Ed. Electives Fund. of Speech (**Suggested course) Elementary Statistics Prog. in Basic* Pascal* FORTRAN* "C"* * Select one course	9 req'd. 3 3 3 3 3 3	27 credits
English	Applied Com. 9 or English 9 (120)	Applied Com. 10 or English 10 (120)	Applied Com. 11 or English 11 (120)	Humanities (120)							
Science	Science 9 (60) and Environmental Science (60)	Applied Bio/Chem or Academic Chem. (120)	Principles of Tech. or Academic Chemistry (120)	Physics (120)	Natural Science	Physics sequence may be started now depending on previous academic record, placement test scores, and advisor's approval.	8 req'd.	SP 103 SP 104	Physics I Physics II	4 4	8 credits
Social Studies	Non Western Cultures (120)	U.S. History (120)	Modern World History (120)	Government (60) Economics (60)							
Other	Phys. Ed. (30) First Aid (15), Career Aware. (8) Library Media (4) Period. Res. (4)	Phys. Ed. (30) On-line Info. (10) Careers (20) Health (60)	Phys. Ed. (30) Independent Living (60) Elective (30)	Phys. Ed. (30) Parenting (60 Elective (30))	MET Core TD 101 TD 102 TD 105 TD elect.	Manuf. Processes I Manuf. Processes II Engineering Materials A Tool Design Course (Articulated credits count)	3 2 3 3 (6)	TD 225	Statics and Strength of Materials	3	20 credits
Tech Core	Note. Skills (60) Pract. Comp (60)	Pract. Comp. (60) Drafting/CAD	Drafting/CAD	Drafting/CAD							
Tech Core	Technical Elective	Drafting/CAD	Drafting/CAD	Drafting/CAD	MET Elec. +TD 310 +TD 370	Adv. Mold Design+ Motion & Time St.+ + Advanced Tech. Skill Courses	3 3	+TD 290 +TD 296 +TD 320	Independent Study+ Internship+ Cost Estimating+ + Advanced Tech. Skill Courses	1-6 1-12 3	9 credits 64

Warren County School District
Tech Prep Welding Technology Program

Articulated Course Scope and Sequence with Edinboro University of Pennsylvania

Note: This course sequence assumes the incoming student qualifies to receive 6 credits for TD Welding I and II through articulation.

Subject	Warren County School District Academic and Vocational-Technical Course Requirements Technical Core Completed at Warren County Career Center				Edinboro University Articulated Program AET - Manufacturing Engineering Technology 64 Credit Hours Required for graduation						
	Grade 9	Grade 10	Grade 11	Grade 12	Year 13			Year 14			
					Course #	Course Title	Credits	Course #	Course Title	Credits	Total Credits
Math	Applied Mathematics I or Algebra I (120)	Applied Mathematics II or Geometry (120)	Algebra I or Algebra II (120)	Math Elective (Trig., Geometry or Pre-Calc.) (120)	General Ed. Core MA 204 MA 106 or MA 107 MA 112 ES 101 or ES 103	General Ed. Electives College Algebra Trigonometry Pre-calculus Calculus College Writing Skills Adv. College Writing	18 req'd. 3 3 3 3 3 3	DS107** MA 260 CS 117 CS 115 CS 118 CS 214	Gen. Ed. Electives Fund. of Speech (**Suggested course) Elementary Statistics Prog. in Basic* Pascal* FORTRAN "C"* * Select one course	9 req'd. 3 3 3 3 3 3	27 credits
English	Applied Com. 9 or English 9 (120)	Applied Com. 10 or English 10 (120)	Applied Com. 11 or English 11 (120)	Humanities (120)							
Science	Science 9 (60) and Environmental Science (60)	Applied Bio/Chem. or Academic Chem. (120)	Principles of Tech. or Academic Chemistry (120)	Physics (120)	Natural Science	Physics sequence may be started now depending on previous academic record, placement test scores, and advisor's approval.	8 req'd.	SP 103 SP 104	Physics I Physics II	4 4	8 credits
Social Studies	Non Western Cultures (120)	U.S. History (120)	Modern World History (120)	Government (60) Economics (60)							
Other	Phys. Ed. (30) First Aid (15), Career Aware. (8) Library Media (4) Period. Res. (4)	Phys. Ed. (30) On-line Info. (10) Careers (20) Health (60)	Phys. Ed. (30) Independent Living (60) Elective (30)	Phys. Ed. (30) Parenting (60 Elective (30))	MET Core TD 101 TD 102 TD 105 TD 110 TD 111	Manuf. Processes I Manuf. Processes II Engineering Mat. Technical Drawing I Technical Drawing II	3 2 3 3 3	TD 225 +TD elec.	Statics and Strength of Materials Tool Design Elect.+	3 3	20 credits
Tech Core	Note. Skills (60) Pract. Comp (60)	Pract. Comp. (60) Welding Tech.	Welding Technology	Welding Technology							
Tech Core	Technical Elective	Welding Technology	Welding Technology	Welding Technology	MET Elec. +TD 320 +TD 370	Cost Estimating+ Motion & Time St.+ (Articulated credits count) + Advanced Tech. Skill Courses	3 3 (6)	TD 290 TD 296 +TD 310	Independent Study Internship Adv. Mold Design+ + Advanced Tech. Skill Courses	1-6 1-12 3	9 credits 64

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Warren County School District
Tech Prep Machine Technology Program

Articulated Course Scope and Sequence with Edinboro University of Pennsylvania

Note: This course sequence assumes the incoming student qualifies to receive 6 credits for TD 101 Manufacturing Processes I and TD 102 Manufacturing Processes II through articulation.

	Warren County School District Academic and Vocational-Technical Course Requirements Technical Core Completed at Warren County Career Center			
Subject	**Grade 9**	**Grade 10**	**Grade 11**	**Grade 12**
Math	Applied Mathematics I or Algebra I (120)	Applied Mathematics II or Geometry (120)	Algebra I or Algebra II (120)	Math Elective (Trig., Geometry or Pre-Calc.) (120)
English	Applied Com. 9 or English 9 (120)	Applied Com. 10 or English 10 (120)	Applied Com. 11 or English 11 (120)	Humanities (120)
Science	Science 9 (60) and Environmental Science (60)	Applied Bio/Chem or Academic Chem. (120)	Principles of Tech. or Academic Chemistry (120)	Physics (120)
Social Studies	Non Western Cultures (120)	U.S. History (120)	Modern World History (120)	Government (60) Economics (60)
Other	Phys. Ed. (30) First Aid (15), Career Aware. (8) Library Media (4) Period. Res. (4)	Phys. Ed. (30) On-line Info. (10) Careers (20) Health (60)	Phys. Ed. (30) Independent Living (60) Elective (30)	Phys. Ed. (30) Parenting (60 Elective (30))
Tech Core	Note. Skills (60) Pract. Comp (60)	Pract. Comp. (60) Machine Tech.	Machine Technology	Machine Technology
Tech Core	Technical Elective	Machine Technology	Machine Technology	Machine Technology

Edinboro University Articulated Program AET - Manufacturing Engineering Technology 64 Credit Hours Required for graduation						
Year 13			**Year 14**			
Course #	**Course Title**	**Credits**	**Course #**	**Course Title**	**Credits**	**Total Credits**
General Ed. Core	General Ed. Electives	18 req'd.		Gen. Ed. Electives	9 req'd.	27 credits
MA 204	College Algebra	3	DS 107**	Fund. of Speech	3	
MA 106 or	Trigonometry	3		(**Suggested course)		
MA 107	Pre-calculus	3	MA 260	Elementary Statistics	3	
MA 112	Calculus	3	CS 117	Prog. in Basic*	3	
ES 101 or	College Writing Skills	3	CS 115	Pascal*	3	
ES 103	Adv. College Writing	3	CS 118	FORTRAN*	3	
			CS 214	"C"*	3	
				* Select one course		
Natural Science	Physics sequence may be started now depending on previous academic record, placement test scores, and advisor's approval.	8 req'd.	SP 103 SP 104	Physics I Physics II	4 4	8 credits
MET Core						20 credits
TD 110	Technical Drawing I	3	TD 225	Statics and Strength of Materials	3	
TD 111	Technical Drawing II	3				
TD 105	Engineering Materials	3	TD Elec.	A Tool Design Course	3	
	(Articulated credits count)	(6)				
MET Elec.						9 credits
+TD 320	Cost Estimating+	3	TD 290	Independent Study	1-6	
+TD 370	Motion & Time St.+	3	TD 296	Internship	1-12	
	+ Advanced Tech. Skill Courses		+TD 310	Adv. Mold Design+	3	
				+ Advanced Tech. Skill Courses		64

ERIE AREA LOCAL PARTNERSHIP

RFP PROCESS

SCHOOLTOWORK
OPPORTUNITIES
U.S. DEPARTMENT OF EDUCATION ★ U.S. DEPARTMENT OF LABOR

Erie Area School-to-Work Local Partnership
Fiscal Agent: N.W. Tri-County Intermediate Unit, 252 Waterford St., Edinboro, PA 16412

To: School District Superintendents
Regional AVTS Directors
Erie Area STW partnership member agencies

From: Mr. Louis Musante, Chairperson, Erie Area School-to-Work Local Partnership

Topic: Solicitation of requests for activity funding

Date: 8/2/96

Enclosed you will find a copy of two proposals for activity funding submitted to the Erie Area School-to-Work partnership by Mr. James Infantino of the Erie County AVTS. If you recall, during the initial meetings held to establish the local partnership, the issue of employer review of partnership activities was discussed and agreed to. It is now time to implement that process and to entertain requests for activity implementation under the School-to-Work grant.

Submit proposals to the Erie Area School-to-Work Project, c/o the Northwest Tri-County Intermediate Unit, 252 Waterford Street, Edinboro, PA 16412.

Enclosed you will also find information on allowable STW activities and a summary of the specific goals and activities specified in the approved project narrative. They should help you to identify activities which which are consistent both with our request for funding and overall STW guidelines. Activities consistent with both would be considered for funding by the partnership.

Requests from other school districts and area agencies are now being solicited, and upon receipt, these will be given equal consideration by the School-to-Work executive committee. Please use Mr. Infantino's format as a model for any proposals which you submit.

Important Funding Information

The initial funding period expires September 30, 1996 and any projects funded under this first cycle must be completed by that date.

It is likely that the partnership will apply for funding for the second cycle which likely will cover the period Oct. 1, 1996 to September 30, 1997.

If you wish to submit requests for activities which might be carried out during the second cycle (10-1-96 to 9-30-97) indicate clearly that the request if for second year funding.

Remember also that the purchase of supplies, classroom materials, and equipment is not allowable.

The partnership is soliciting membership on partnership committees. Enclosed is a committee application. It is important for school district and local agency personnel (administrative and instructional) to become active members on the various committees. Please distribute membership forms to potential interested parties.

The partnership encourages you to submit requests for funding ASAP. If you have any questions please contact me at 814-774-9604 (Westminister Manufacturing) or Dr. Gacka at 734-5610, Ext. 230.

SCHOOL-TO-WORK GRANT PROPOSAL
1996-97 SCHOOL YEAR

AVTS: Erie County Technical School
8500 Oliver Road
Erie, PA 16509

PRINCIPAL'S SIGNATURE: ____________________________

PROGRAM CONTACT PERSON: James A. Infantino
TELEPHONE NUMBER: (814) 868-9640, Ext. 355

FISCAL CONTACT PERSON: Paul Fritz, Business Manager, ECTS

PROPOSAL:

The focus of this program is to help vocational educators better prepare their students to meet the demands of today's workplace through direct involvement with local businesses. By visiting businesses and industries, a faulty member should be able to:

1. gain experience that can be carried back to the classroom and implemented as part of their curriculum.

2. be exposed to information to update, modify, expand, and improve the quality of their occupational program.

3. support and strengthen the relationship between business, industry, and the vocational school.

4. identify facility and equipment needs.

5. initiate communications that might foster opportunities for Co-op placements or job shadowing experiences for students.

6. solicit additional representatives from business and industry to serve on our various Advisory and Craft Committees.

I propose that any faculty member who wishes to spend up to 3 days in various businesses or industries be given a $100.00/day stipend which shall include his/her mileage and meal expenses. A day is defined as 6 hours and 45 minutes (including lunch), which is the normal working day for our teachers. All contacts for placement would go through a Job Site Coordinator whose responsibility it would be to appropriately match the vocational interests of the faculty member with an industrial site. The Coordinator would also be responsible for all reporting and recording as it relates to providing the necessary documentation for this grant.

Possible visitation dates are: November 29, December 2, December 23, 26, 27, 30, and 31 of 1996, as well as January 20, February 17, April 1 and 2 of 1997. These are days that the teachers in our building are not scheduled to teach, nor are they paid to be in the building.

BUDGET:

Stipends for faculty 20 faculty x 3 days each @$100.00/day	$ 6,000.00
Salary for part-time Job Site Coordinator	500.00
Supplies, advertising, miscellaneous costs of administering the program	100.00
TOTAL	$ 6,600.00

SCHOOL-TO-WORK GRANT PROPOSAL
1996-97 SCHOOL YEAR

AVTS: Erie County Technical School
8500 Oliver Road
Erie, PA 16509

PRINCIPAL'S SIGNATURE: ____________________

PROGRAM CONTACT PERSON: James A. Infantino
TELEPHONE NUMBER: (814) 868-9640, Ext. 355

FISCAL CONTACT PERSON: Paul Fritz, Business Manager, ECTS

PROPOSAL:

We propose to establish a School-to-Work Program which will involve community-based job shadowing and career exploration activities for sophomores, juniors, and seniors at ECTS. This program will involve:

- hiring a part-time School-to-Work program coordinator.
- in-servicing teachers on the benefits and procedures for job shadowing.
    - a. Sophomores will participate in field trips to work sites.
    - b. Juniors and seniors will participate in job shadowing field experiences.
- developing career exploration/clustering possibilities within our vocational school and in the community.
- educating and recruiting employers/businesses in the community to serve as field sites.

BUDGET:

Field Trip Transportation for Sophomores 32 Classes x $100.00/Trip	$ 3,200.00
Salary for Part-Time School-to-Work Coordinator 90 Days at $50.00/Day	4,500.00
Contingency Transportation Money for Junior/Senior Job Shadowing Field Experiences	1,000.00
Supplies: Film, Newsletter Production, Stationery, etc.	1,000.00
Public Relations: Billboards for Advertising Program	1,000.00
TOTAL	$ 10,700.00

A. ALLOWABLE ACTIVITIES

Local partnerships may expend funds only for activities undertaken to carry out School-to-Work Opportunities programs. Such activities may include:

1. recruiting and providing assistance to employers, including small- and medium-size businesses to provide work-based learning component activities.

2. establishing consortia of employers to support the School-to-Work Opportunities program and provide access to jobs related to the career majors of students.

3. supporting or establishing intermediaries (selected from among the members of the local partnership) to perform connecting activities and provide assistance to students or school dropouts in obtaining jobs and further education or training.

4. designing or adapting school curricula that can be used to integrate academic, vocational, and occupational learning; school-based and work-based learning; and secondary and postsecondary education for all students in the area served.

5. providing training to work-based and school-based staff on new curricula, student assessments, student guidance, and feedback to the school regarding student performance.

6. establishing, in schools participating in a School-to-Work Opportunities program, a graduation assistance program to assist at-risk students, low-achieving students, and students with disabilities in graduating from high school, enrolling in postsecondary education or training, and finding or advancing in jobs.

7. providing career exploration and awareness services, counseling and mentoring services, college awareness and preparation services, and other services (beginning at the earliest possible age, but not later than the 7th grade) to prepare students for the transition from school to work.

8. providing supplementary and support services, including child care and transportation, when such services are necessary for participation in a local School-to-Work Opportunities program.

9. conducting or obtaining an in-depth analysis of the local labor market in conjunction with the labor market analyst with the local partnership.

10. integrating school-based and work-based learning into job training programs for school dropouts that are in existence on or after the date of the enactment of this Act.

11. establishing or expanding school-to-apprenticeship programs in cooperation with registered apprenticeship agencies and apprenticeship sponsors.

12. assisting participating employers, including, but not limited to, small- and medium-size businesses, to identify and train workplace mentors and to develop work-based learning components.

13. promoting the formation of partnerships between elementary schools and secondary schools (including middle schools) and local businesses as an investment in future workplace productivity and competitiveness.

14. designing local strategies to provide adequate planning time and staff development activities for teachers, school counselors, related services personnel, and school-site mentors, including opportunities outside the classroom that are at the worksite.

15. enhancing linkages among after-school, weekend, and summer jobs; career exploration; and school-based learning.

16. obtaining the assistance of organizations and institutions that have a history of success in working with school dropouts and at-risk and disadvantaged youths in recruiting such school dropouts and youths to participate in local School-to-Work Opportunities programs.

95-96/98-99 PLAN OF OPERATION FOR SCHOOL-TO-WORK DEVELOPMENT GRANT FOR ERIE AREA STW

OBJECTIVE 3 -- Establish the "baseline" status of the existing STW system with an emphasis on identifying the needs of the local educational community.

PERFORMANCE STANDARDS:

1. Meeting agendas and minutes with attendance at designated levels
2. Presentation of formal reports of STW status for each occupational cluster
3. Presentation of a formal report of the superintendents of the Erie County school districts
4. Presentation of a formal report on the status of related agency services.

EVALUATION PROCEDURES:

1. Ongoing monitoring of partnership activities by the partnership membership
2. Self report evaluations by participants

NUMBER OF STUDENTS/ADULTS TO BE SERVED: 100

ACTIVITIES	TIMELINE	PERSONNEL
Activity 1: Identify weaknesses and strengths facing school districts in the implementation of a viable school to work system. a) Identify working sub committees or identify third party evaluator b) Provide training to committee members on STW components and processes for evaluation including sources of data and rubrics for scoring. c) Develop specifications for data collection and forms, reporting, etc. to guarantee uniformity across areas. d) Identify appropriate back-up documentation.	April 96-June 99	Consultants as identified by partnership
Activity 2: Compile information into a "state of the region" report relative to the status of STW implementation. a) Identity entity for compilation of information and development of a summary report b) Reduce raw data to tables, charts, and graphs. c) Provide formal reporting to the partnership d) Extract data for one or more articles using publications of general distribution. e) Include a formal presentation of findings at a general partnership meeting.	April 96-June 99	Consultants as identified by partnership
Activity 3. Identify and communicate the needs of educators a) Identify a committee to establish a report on the needs of local educators b) Translate needs into a series of objective statements of skill or behavioral competencies toward which curriculum reform could be directed. c) Develop the findings into a formal report d) Present the report to a special meeting called by the partnership with s specific emphasis on having private sector personnel in attendance.	April 96-June 99	Consultants as identified by partnership
Activity 4: Identify for partnership educators for funding, corrective actions for implementation which address barriers which result in students entering the workplace with inadequate skills. a.) Consider implementation activities proposed by member schools and agencies b.) Authorize implementation based on the specifications and merits of the proposals c.) Monitor implementation of the specifications of the intervention	April 96-June 99	Consultants as identified by partnership

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OBJECTIVE 4 – Establish a joint employer-educator task force to develop a written regional statement of basic employability competencies (pre-employment, technical, and life skills) and publicize the competencies both in school and the general media

PERFORMANCE STANDARDS:

1. Meeting agendas and minutes with attendance at designated levels.
2. Development of a written initial employability competency checklist(s)
3. Development of publicity materials
4. Review of the publicity schedule and audience notes.

EVALUATION PROCEDURES:

1. Ongoing monitoring of partnership activities by membership
2. Critique of competency materials by an outside group of human resource personnel
3. Analysis of adoption of the checklists by school and private sector personnel and extent of utilization in student portfolios

NUMBER TO BE SERVED: 100

ACTIVITIES	TIMELINE	PERSONNEL
Activity 1: Survey existing literature for competency checklists related to basic employability skills	4-01-96 to 9-30-96	selected consultants and contractors
Activity 2: Host a minimum of three study sessions to develop operational checklists and statements of basic employability competencies. a) Identify committee members and secure consultants as necessary b) Provide draft copies for review by interested partnership members c) Continue a process of refinement with presentation to the group of a recommended document.	4-01-96 to 9-30-96	selected consultants and contractors
Activity 3: Provide training for human resource and school district guidance personnel in the use of the employability competencies as a device for student advisement and program development. a) Identify general specifications for rating b) Host workshops for personnel for personnel considering implementation of the competency checklists. c) Provide opportunities for personnel utilizing the competency checklists to meet for the purpose of discussion utilization and achieving refinement.	4-01-96 to 9-30-96	selected consultants and contractors
Activity 4: Publicize the existence and use of criteria for basic employability using television, radio, and print media. a) Develop informational materials b) Develop articles for general media c) Include articles in targeted media.	4-01-96 to 9-30-96	selected consultants and contractors

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ACTIVITIES	TIMELINE	PERSONNEL
Activity 4: Operate an expanded co-op and apprenticeship recognition event as a recruitment tool for program expansion. a) Invite students to speak of their experiences to students and employers b) Invite work-site mentors to speak of their experiences c) Develop a formal visual presentation relative to work-site opportunities d) Provide recognition awards to participating employers	4-01-96 to 9-30-99	Designated consultant and work-site coordinator
Activity 5: Identify a study group to identify and develop preliminary guidelines for the establishment of a "continuum of work site experiences." a) Integrate a variety of work-site programs ranging from community service through apprenticeship b) Develop definitions, criteria, and standards for each level. c) Establish general availability of each type of experience.	4-01-96 to 9-30-99	Designated consultant and work-site coordinator
Activity 6: Develop materials which could be used by personnel already having regular contacts with employers informing them of the availability and characteristics of various work-site training programs. a) Provide AVTS advisory committees, Job Center Advisory boards, professional societies with accurate materials dealing with school-to-work transition. b) Develop a "blueprint" for the distribution of information of secondary and post-secondary training opportunities to employers and labor groups.	4-01-96 to 9-30-99	Designated consultant and work-site coordinator
Activity 7: Study the feasibility of establishing a regional which would attempt to integrate summer employment with the student's academic program and designated career objectives. a) Develop a "job pool" of summer work opportunities b) Develop procedures for the referral or placement of secondary students	4-01-96 to 9-30-99	Designated consultant and work-site coordinator

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OBJECTIVE 5 – Develop opportunities for the expansion of work-site educational placements

PERFORMANCE STANDARDS:

1. Meeting agendas and minutes with attendance at designated levels.
2. An increase of 10% in the number of available work-based placement sites for SY 96-97 (over 95-96 existing co-op and apprenticeship placement openings)
3. The existence and distribution of work-based recruitment materials
4. A formal report dealing with a summer placement center and work-site summer placement opportunities.

EVALUATION PROCEDURES:

1. Ongoing monitoring of partnership activities by the partnership membership
2. Self report evaluations by participants
3. Supervisory reports of event effectiveness
4. Analysis of data relative to summer job availability and placements
5. Analysis of data relative to work-site placement opportunities

NUMBER OF STUDENTS/ADULTS TO BE SERVED: 200

ACTIVITIES	TIMELINE	PERSONNEL
Activity 1: Establish specifications for a viable "Educator in the Workplace" program. a) Establish a working committee to structure one or more levels of programs intensity. b) Identify policies, procedures, evaluation criteria, expectations, reporting format, data to be collected, etc.	4-01-96 to 9-30-99	Designated consultant and work-site coordinator
Activity 2: Initiate an "Educator in the Workplace" program during June 1996 with the intention of continuing it as an ongoing program. a) Solicit 20 local educators to complete an EIW experience consistent with the specifications developed in activity 1. b) Solicit 20 work-site mentors to inform and monitor teachers who are participating in the Educator in the Workplace program. 1. Provide training sessions as necessary. 2. Establish communications between participants and participant company management. c) Coordinate the program with the existing co-op and apprenticeship programs	4-01-96 to 9-30-99	Designated consultant and work-site coordinator
Activity 3: Augment the summer Educator in the Workplace program by operation of a work site visitation program for school district staff during in-service or Act 80 days. a) Solicit 100 instructors from elementary school through high school levels to partake in full day visitations to private industry sites. b) Solicit the participation of a minimum of 30 companies to participate in the work-site visitation program. c) Establish a participant "clearinghouse" to minimize repetitive or duplicative contacts with industry. d) Coordinate the program with the existing co-op and apprenticeship programs.	4-01-96 to 9-30-99	Designated consultant and work-site coordinator

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OBJECTIVE 6 -- Following a process of proposal review and approval by the partnership membership (See attachment "School-to-Work Possible Project Activities"), expand implementation of school reform initiated by the Tri-County Tech Prep Consortium.

PERFORMANCE STANDARDS:

1. Establishment of a process for developing detailed specifications and procedures for presentation of proposed educational activity to the partnership.
2. Documentation that each implemented activity has been proposed to the partnership for consideration, discussion, and approval

EVALUATION PROCEDURES:

1. Ongoing monitoring of partnership activities by membership.
2. Formal evaluation of each sub-contracted activity at the conclusion of the project.
3. End of project formal report by providing entity.
4. Meeting minutes indicating activity presentations and recommendations for implementation.

Proposals for Implementation may be presented to the partnership for consideration and approval in any of the following areas based on a review of the baseline data established in Objective 3.

NUMBER OF STUDENTS/ADULTS TO BE SERVED: 6,000

ACTIVITIES	TIMELINE	PERSONNEL
Activity 1. Promote the revision and/or expansion of existing high school guidance services in order to provide an emphasis on school-to-work related programs. a) provide supportive services allowing students to attend relevant career activities b) secure recruitment materials and establish school-to-work career centers c) secure software and training to allow for the establishment of electronic career centers d) promote visitations to industry sites by high school counselors e) develop and publish district specific career pathway planning instruments	4-01-96 to 9-30-99	School district personnel, selected consultants, and contracted personnel
Activity 2 Expand the utilization of external performance based assessment devices as part of the school assessment program. a) provide partnership members with electronic linkages to Internet resources containing information on industry skill standards b) explore the viability of SOCAT and industry certification examinations for integration into local AVTS assessment and certification c) develop a regional library of industry skill standard materials d) solicit presenters from industrial societies to provide general training sessions dealing with industry skill standard projects e) support the integration of performance assessment into school district career pathways	4-01-96 to 9-30-99	School district personnel, selected consultants, and contracted personnel
Activity 3 Support school-to-work related staff development programs a) provide additional school-to-work training sessions to supplement the Goals 2000 regional summer institute b) provide specific one day seminars determined by the local partnership c) provide stipends for seminars and workshop attendance, i.e. the VAP visitation to PA AVTS sites.	4-01-96 to 9-30-99	School district personnel, selected consultants, and contracted personnel

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ACTIVITIES	TIMELINE	PERSONNEL
Activity 4 - Support revision of existing school district curriculum consistent with the concept of developing 6 year articulated career pathways. a) replicate existing PDE approved Tech Prep programs b) develop school building specific career pathways c) integrate school district curriculum with employment prerequisites and post secondary entrance requirements d) expand and revise AVTS curriculum consistent with industry certification requirements e) Increase the academic rigor of existing AVTS curriculum competencies and refinement of cluster area curriculum prerequisite to submission of requests for PDE Tech Prep program approval.	4-01-96 to 9-30-99	School district personnel, selected consultants, and contracted personnel
Activity 5 - Entertain proposals for implementation of specific activities as outlined on the attached "Local Partnership Possible Project Activities.	4-01-96 to 9-30-99	School district personnel, selected consultants, and contracted personnel

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OBJECTIVE 7 – Objective 7: Initiate a program of public awareness of the requirements for admission to and rewards from successful completion of technical training.

PERFORMANCE STANDARDS:
1. Establishment of a publicity committee.
2. Documentation of a regional publicity plan for vocational education

EVALUATION PROCEDURES:
1. Completion of a formal review of the degree to which the publicity plan has been implemented.
2. Review by partnership members of the quality and nature of publicity.
3..Completion of a formal investigation of the success of publicity efforts.

NUMBER OF STUDENTS/ADULTS TO BE SERVED: 3,000

ACTIVITIES	TIMELINE	PERSONNEL
Activity 1 - Identify a public relations subcommittee a) Develop a comprehensive plan for the dissemination of information about technical education. 1. Identify specific target populations with designated objectives for each. 2. Evaluate the degree to which objectives have been achieved. b) Develop local materials or secure commercial materials consistent with the regional plan c) Coordinate planning with other STW regional partnerships d) Fully support any statewide STW publicity initiatives and expand on the programs with local publicity f) Develop a local major publicity event to highlight the availability and/or outcomes of technical education.	4-01-96 to 9-30-99	school district personnel, selected consultants, and contracted personnel
Activity 2 - Develop a publicity program emphasizing the success stories of individuals who have completed technical education. a) Identify individuals willing to appear on local radio and television shows b) Develop articles for submission to general and specific print media.	4-01-96 to 9-30-99	school district personnel, selected consultants, and contracted personnel

WONDERLIC TEST BATTERY

Regional Occupational Skill Center Assessment
Northwest Tri-County Intermediate Unit
Dr. Richard C. Gacka
252 Waterford Street
Edinboro, PA 16412

Guide to Tests Used in Assessment

Test of Ability: Wonderlic Personnel Test

The WPT is 50 item paper and pencil test which requires the individual to solve problems covering a variety of problem types. The questions include work comparisons, disarranged sentences, sentence parallelism, direction following, number comparisons, number series, analysis of geometric figures, and story problems requiring either math or logic solutions. The test items are arranged in order of difficulty. Scores on the WPT are highly related to much longer tests such as the Wechsler Adult Intelligence Scale (WAIS), the General Aptitude Test Battery (GATB), or the Armed Services Vocational Aptitude Battery (ASVAB). It is a short form test of general cognitive ability.

Scores on the WPT are reported as a raw score, with a mean of 21 and a SD of 7.12. Minimum passing scores by job classification have been established, and reveal the fundamental steps in the test score/job complexity relationship. As jobs become more complex, the minimum score increases. Most often this increase is in three raw score point steps: 12, 15, 18, 21,24, 27, 30. These test score steps can be interpreted as follows:

Score	Interpretation
12	Common for plant employees and material handlers.
15	The threshold level where employers may expect employees to learn from written manuals.
18	Level where employees are first able to work independent from supervision, usually in repair or skilled trades.
21	Approximately the average score for all workers in the U.S. Scores are common with employees who work with standardized alphanumeric systems.
24	Usually found in first line supervisors.
27	Associated with middle management and higher level technicians.
30	Found with professional and executive level managers.

Tests of Academic Skill: Wonderlic Basic Skills Tests

The WBST are short form measures of adult language and math skill. The total WTBS is made up of two parts, Verbal and Quantitative. It is designed to measure the job-readiness of teenagers and adults. The tests yield scores related to the U.S. Department of Labor General Education Development (GED) scales. General Education Levels, as developed by the Dept. of Labor range from level 1 (approximately 4th grade level) to level 6 (college graduate level). Because the WBST is designed to be a test of basic skills, it measures skill levels only to the GED 3 level. Within each of the first three GED levels the student obtains a General Score ranging from zero to 500. For example, at GED level 2, a student obtaining a General Score of 380 shows much greater mastery of the materials in level 2 than a student obtaining a General Score of 150. The Verbal and Quantitative Tests are combined to generate a third major score, the Skills Composite. As in each of the GED levels, a General Score is also provided for the Verbal, Quantitative, and Skill Composite major scores. The following table summarizes the scores generated by the WBST.

Test	GED Score Information	Grade Level Scores
Verbal Test	A GED score is given for the Verbal Test as a whole. A general score ranging from 0 to 500 is also provided for each of the three GED levels, reflecting the degree of mastery within that level.	Grade level scores for the Verbal tests as a whole.
Quantitative	A GED score is given for the Quantitative Test as a whole. A general score ranging from 0 to 500 is also provided for each of the three GED levels, reflecting the degree of mastery within that level..	Grade level scores for the Quantitative tests as a whole.
Skills Composite	A GED score is given for both the Verbal and QuantitativeTests. A general score ranging from 0 to 500 is also provided for each of the three GED levels, reflecting the degree of mastery across both tests	Grade level scores for the Composite as a whole.

As noted above, each GED level is accompanied by a general score within that GED level (or for the test as a whole). The general score reflects the degree of mastery of tasks included at each GED level. The following table explains the meaning of general scores.

General Score	Meaning of General Score
Below 150	Severe deficiency at that GED level or for the overall test.
150 to 200	Moderate deficiency at that GED level or for the overall test.
265	"Minimum competency" at the designated level. A score of 265 means 65% of the items at that level were passed.
350 or higher	Mastery level

The following table shows the average general scores by GED level for high school students involved in the WBST normative population.

Norms*	TOTAL	GED 1	GED 2	GED 3
Composite	295	433	293	151
Verbal	294	420	320	206
Quantitative	294	443	263	93

Based on the field test population the median WBST scores by job title and training program are as follows:

	Verbal				Quantitative			
Occupation	GED1	GED2	GED3	TOTAL	GED1	GED2	GED3	TOTAL
Welder	500	420	320	370	500	350	100	345
Cosmotology	500	400	255	500	260	0	295	300
Machinist	500	380	205	330	500	295	25	310
Food Service	500	283	138	265	500	218	0	265

Additional supplemental scores are provided for both the Verbal and Quantitative scales. Scores are provided in the areas of Word Knowledge, Sentence Construction, and Information Retrieval. For the Quantitative test, sub-scales for Explicit, Applied, and Interpretative skills are provided.

The WBST is a new assessment instrument, being published in 1994. The Tri-County Intermediate Unit participated in the norming of the instrument along with 300 schools, government agencies, and private businesses.

GENERAL EDUCATIONAL DEVELOPMENT

(Information taken from Handbook for Analyzing Jobs, U.S. Department of Labor)

General Educational Development (GED), a component of Worker Characteristics, embraces those aspects of education (formal and informal) which contribute to the worker's (a) reasoning development and ability to follow instructions, and (b) acquisition of "tool" knowledge such as language and mathematical skills. This is education of a general nature which does not have a recognized, fairly specific occupational objective. Ordinarily, such education is obtained in elementary school, high school, or college. However, it may be obtained from experience and self study.

DIVISIONS OF GED SCALE

The GED Scale is composed of three divisions: Reasoning Development, Mathematical Development, and Language Development. Each should be considered and rated independently of the others in evaluating the levels required for a job. In theory, Mathematics and Language are components of Reasoning; therefore, Reasoning should have at least as high a rating as the higher one assigned for Mathematics or Language.

RATIONALE FOR GED SCALE DEFINITIONS

The description of the various levels of language and mathematical development are based on curriculum taught in schools throughout the United States. An analysis of mathematics courses in school curriculums reveals distinct levels of progression in the primary and secondary grades and in college. These levels of progression facilitated the selection and assignment of six levels of GED for the mathematical developmental scale.

However, though language courses follow a similar pattern of progression in primary and secondary school, particularly in learning and applying the principles of grammar, this pattern changes at the college level. The diversity of language courses offered at the college level precludes the establishment of distinct levels of language progression for these four years. Consequently, language development is limited to five defined levels of GED.

A sample of job-worker situations for each GED level has been placed on a scale. These situation descriptions do not include all work devices that may be used by the worker. However, they have been written to make the GED level of each as explicit as possible.. Since the discrimination by level is dependent on a verbal expression, it is not precise. Familiarity with the total range of illustrative situations should contribute, however, to the use and application of the scales.

SCALE OF GENERAL EDUCATION DEVELOPMENT (GED)

	REASONING AND DEVELOPMENT	MATHEMATICAL DEVELOPMENT	LANGUAGE DEVELOPMENT
LEVEL 1	Apply commonsense understanding to carry out simple one-or-two step instructions. Deal with standardized situations with occasional or no variables in or from these situations encountered on the job.	Add and subtract two-digit numbers. Multiply and divide 10's and 100's by 2, 3, 4, 5. Perform the four basic arithmetic operations with coins as part of a dollar. Perform operations with units such as cup, pint, and quart; inch, foot, and yard; and ounce and pound.	Reading: Recognize meaning of 2,500 two-or-three syllable words. Read at the rate of 95-120 words per minute. Compare similarities and differences between words and between series of numbers. Writing: Print simple sentences containing subject, verb, and object, and series of numbers, names, and addresses.

	REASONING AND DEVELOPMENT	MATHEMATICAL DEVELOPMENT	LANGUAGE DEVELOPMENT
LEVEL 2	Apply commonsense understanding to carry out detailed but uninvolved written or oral instructions. Deal with problems involving a few concrete variables in or from standardized situations.	Add, subtract, multiply, and divide all units of measure. Perform the four operations with like common and decimal fractions. Compute ratio, rate, and percent. Draw and interpret bar graphs. Perform all arithmetic operations involving all American monetary units.	Reading: Passive vocabulary of 5,000-6,000 words. Read at rate of 190-215 words per minute. Read adventure stories and comic books, looking up unfamiliar words in dictionary for meaning, spelling, and pronunciation. Read instructions for assembling model cars and airplanes. Writing: Write compound and complex sentences using cursive style, proper end punctuation, and employing adjectives and adverbs. Speaking: Speak clearly and distinctly with appropriate pauses and emphasis, correct pronunciation, variations in word order, using present, perfect, and future tenses.
LEVEL 3	Apply commonsense understanding to carry out instructions furnished in written, oral, or diagrammatic form. Deal with problems involving several concrete variables in or from standardized situations.	Compute discount, interest, profit and loss; commission, markup, and selling price; ratio and proportion; and percentage. Calculate surfaces, volumes, weights, and measures. Algebra: Calculate variables and formulas; monomials and polynomials; ratio and proportion variables, and square roots and radicals. Geometry: Calculate plane and solid figures, circumference, area, and volume. Understand kinds of angles and properties of pairs of angles.	Reading: Read a variety of novels, magazines, atlases, and encyclopedias. Read safety rules, instructions in the use and maintenance of shop tools and equipment, and methods and procedures in mechanical drawing and layout work. Writing: Write reports and essays with proper format, punctuation, spelling, and grammar, using all parts of speech. Speaking: Speak before an audience with poise, voice control, and confidence, using correct English and well-modulated voice.
LEVEL 4	Apply principles of rational systems to solve practical problems and deal with a variety of concrete variables in situations where only limited standardization exists. Interpret a variety of instructions furnished in written, oral, diagrammatic, or schedule form	Algebra: Deal with system of real numbers: linear, quadratic, rational, exponential, logarithmic, angle and circular functions, and inverse functions; related algebraic solution of equations and inequalities; limits and continuity; and probability and statistical inference. Geometry: Deductive axiomatic geometry, plane and solid, and rectangular coordinates. Shop Math: Practical application of fractions, percentages, ratio and proportion, measurement, logarithms, practical algebra, geometric construction, and essentials of trigonometry.	Reading: Read novels, poems, newspapers, periodicals, journals, manuals, dictionaries, thesauruses, and encyclopedias. Writing: Prepare business letters, expositions, summaries, and reports, using prescribed format and conforming to all rules of punctuation, grammar, diction, and style. Speaking: Participate in panel discussions, dramatizations, and debates. Speak extemporaneously on a variety of subjects.

	REASONING AND DEVELOPMENT	MATHEMATICAL DEVELOPMENT	LANGUAGE DEVELOPMENT
LEVEL 5	Apply principles of logical or scientific thinking to define problems, collect data, establish facts, and draw valid conclusions. Interpret an extensive variety of technical instructions in mathematical or diagrammatic form. Deal with several abstract and concrete variables.	Algebra: Work with exponents and logarithms, linear equations, mathematical induction and binomial theorem, and permutations. Calculus: Apply concepts of analytic geometry, differentiation, and integration of algebraic functions with applications. Statistics: Apply mathematical operations to frequency distributions, reliability and validity of tests, normal curve, analysis of variance, correlation techniques, chi-square application and sampling theory, and factor analysis.	Reading: Read literature, book and play reviews, scientific and technical journals, abstracts, financial reports, and legal documents. Writing: Write novels, plays, editorials, journals, speeches, manuals, critiques, poetry, and songs. Speaking: Conversant in the theory, principles, and methods of effective and persuasive speaking, voice and diction, phonetics, and discussion of debate.
LEVEL 6	Apply principles of logical or scientific thinking to a wide range of intellectual and practical problems. Deal with non-verbal symbolism (formulas, scientific equations, graphs, musical notes, etc.) in most difficult phases. Deal with a variety of abstract and concrete variables. Apprehend the most abstruse classes of concepts.	Advanced calculus: Work with limits, continuity, real number systems, mean value theorems, and implicit function theorems. Modern algebra: Apply fundamental concepts of theories of groups, rings, and fields. Work with differential equations, linear algebra, infinite series, advances operations methods, and functions of real and complex variables. Statistics: Work with mathematical probability and applications, experimental design, statistical inference and econometrics.	Same as level 5.

Summary

WPT
Scores below 10 show significant problem solving impairment. This level of functioning indicates a poor prognosis for employment. Employment, if acquired, is generally at an unskilled level, where assignments are supervised and decision making is not required.

Scores ranging from 13 to 15 show weakness and a generally poor prognosis for post-secondary skilled training. A score of 15 is generally the minimum for approval for government funding under the Ability to Benefit Legislation.

Scores in the 15 to 21 range show ability for skilled employment. The mean score for the national population is 21.

WBST

Most skilled positions require a GED Level of 3. A GED level of zero or 1 indicates academic skills inadequate for general employment. A GED Level of 1 is equivalent to a 4th grade level.

Within each GED level, a general score of 265 indicates that the individual correctly answered 65% of the items. A score of 350 indicates mastery of the material at that GED level.

The composite score is an indicator of overall academic skill.

SAMPLE INDIVIDUAL ASSESSMENT REPORT

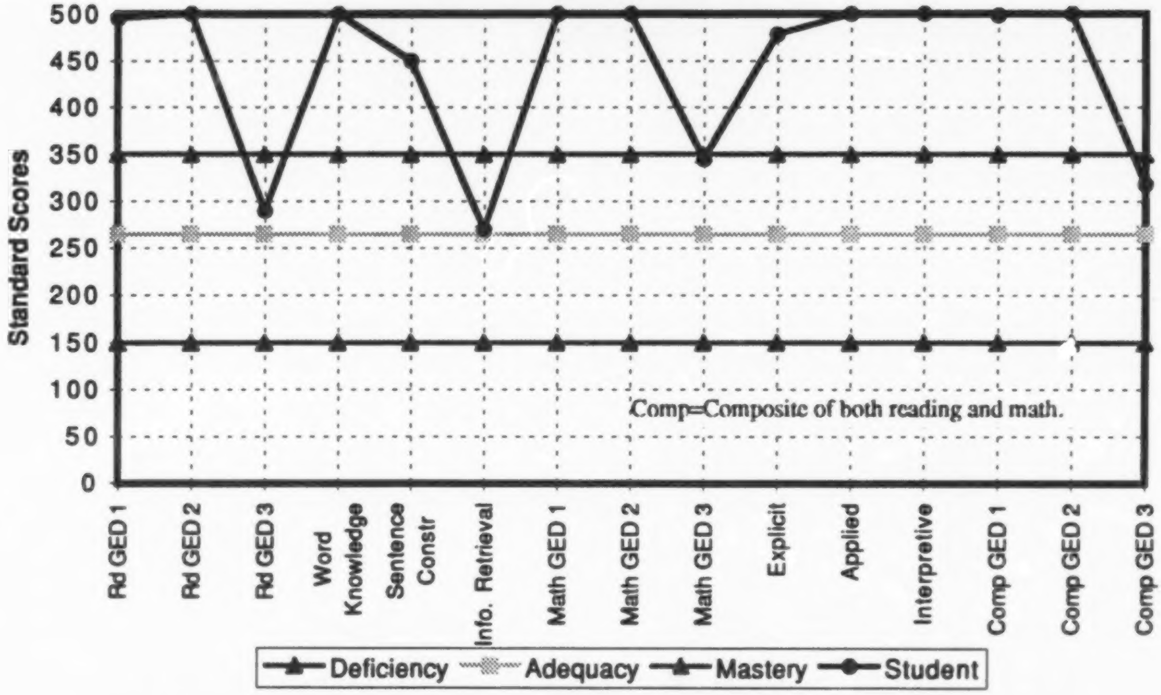
ADULT ED STW GROUP CHARTS

AE STW PRE-POST CHARTS

REGIONAL SKILL CENTER CHARTS

Regional Occupational Skill Center Assessment
Northwest Tri-County Intermediate Unit

WBST Profile: Sample



WBST GED level 1 tests basic skills in reading and math. In mathematics it measures basic addition, subtraction, multiplication, and division. In reading it measures basic word knowledge, and the understanding of simple grammatical styles. Generally, the content measured at GED Level 1 approximates the material which is taught in mid to upper elementary grades.

WBST GED Level 2 tests somewhat more advanced skills. In mathematics it measures fractions and decimals and the use of basic computations to solve simple problems. In reading it tests more advanced levels and the comprehension of somewhat more difficult reading. Generally, the content measured at GED Level 2 approximates the material taught in grades 6 through 9.

WBST GED Level 3 tests advanced skills. In mathematics it measures the ability to read tables and utilize data to complete multiple step computations to solve more difficult problems. In reading, it tests advanced vocabulary and comprehension. Also at Level 3 the client is asked to interpret and draw inferences from information. Generally, the content measured at GED Level 3 is the material taught in grades 9 through 12.

Studies have indicated that the minimum recommended academic levels for any type of post-secondary training is a GED level of 3 in both reading and math. Ideally, scores at Level 3 should approximate 350 or higher. Scores below 265 in Levels 1 or 2 are indicative of significant difficulty and some "refresher" academic training is strongly recommended prior to the start of actual technical training.

Report Date: 10/6/96

WBST data for **Sample Student/Employee**

Main WBST Area	Highest GED Level Achieved	Score at achieved GED level.	Prognosis for success in Post-Secondary study
Total Verbal	3	370	Acceptable
Total Quantitativ	3	445	Acceptable
Total Composite	3	408	Acceptable

WBST Area	Deficiency	Adequacy	Mastery	Student	Status
Rd GED 1	150	265	350	495	Strong Mastery
Rd GED 2	150	265	350	500	Strong Mastery
Rd GED 3	150	265	350	290	Minimal Adequacy (65%)
Word Knowledge	150	265	350	500	Strong Mastery
Sentence Constr	150	265	350	450	Strong Mastery
Info. Retrieval	150	265	350	270	Minimal Adequacy (65%)
Math GED 1	150	265	350	500	Strong Mastery
Math GED 2	150	265	350	500	Strong Mastery
Math GED 3	150	265	350	345	Adequate but Below Mastery
Explicit	150	265	350	478	Strong Mastery
Applied	150	265	350	500	Strong Mastery
Interpretive	150	265	350	500	Strong Mastery
Comp GED 1	150	265	350	498	Strong Mastery
Comp GED 2	150	265	350	500	Strong Mastery
Comp GED 3	150	265	350	318	Adequate but Below Mastery

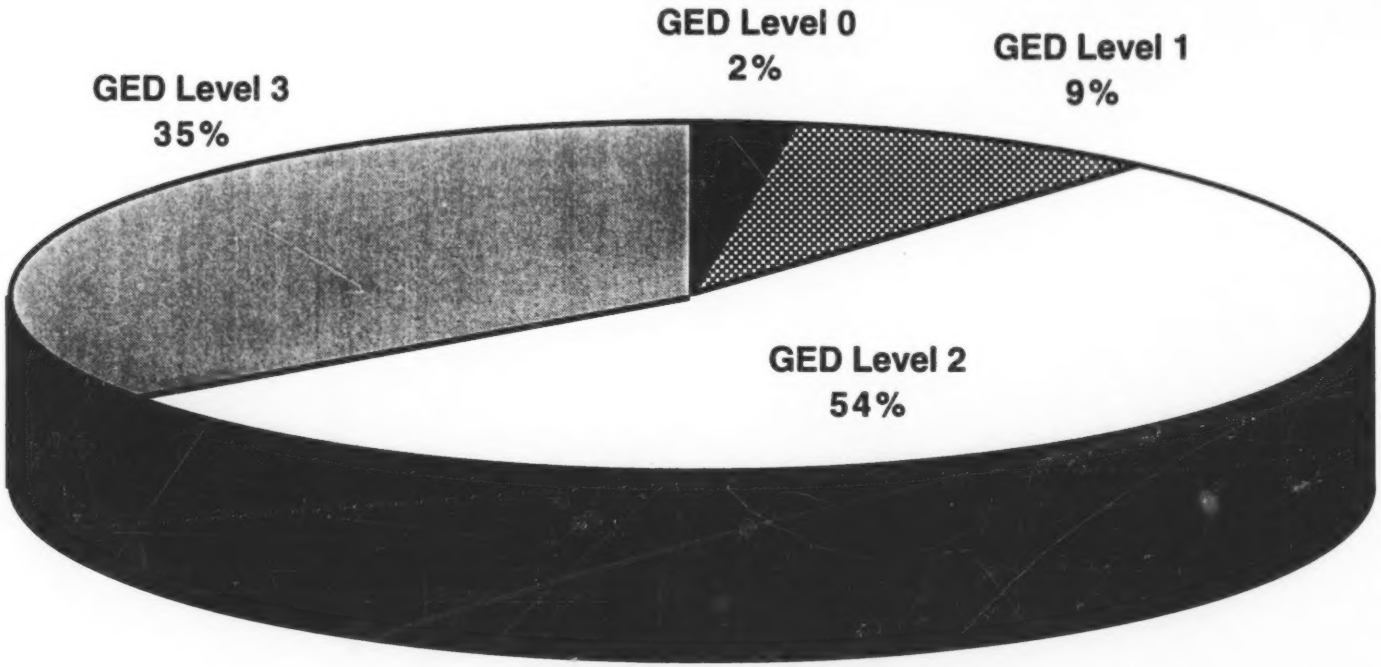
The Wonderlic Basic Skills Tests measure reading and arithmetic skills up through a basic high school level. The tests use a scoring system developed by the U.S. Department of Labor called "GED Levels." There are six GED levels in the DOL system. GED Level 1 measures very basic skills, those that are generally taught in mid to upper elementary school, while GED level 2 measures materials taught in upper elementary to Jr. High School classes. GED Level 3 measures material that would be taught in general classes in high school. The Wonderlic Tests only measure academic levels up through GED Level 3. Within each GED level the WBST yields a numerical score ranging from zero to 500 with zero being extremely low and 500 being very high. A score of 265 means that the individual correctly answered 65% of the questions at that GED level of difficulty. This level is called minimal adequacy because 65% is not a particularly high percentage correct. A score of 350 means that the individual obtained 85% of the questions at that GED Level correct. This level is called "mastery level" because 85% is thought to reflect correct performance in most cases.

The Department of Labor has also established the minimal GED levels in reading and arithmetic that are needed for success in each occupation. Generally, any occupation requiring post-high school training requires at least a GED level of 3 in reading and math. Individuals who want to go on for some type of skilled training and who obtain a score below 3 at any GED Level in either reading or math should consider some brief "refresher" coursework. Adults scoring below 265 at GED Level 2 show significant academic deficiency and should consider enrolling in an adult math or reading program, preferably one that emphasizes the use of reading and math skills in a vocational context.

The pattern that is evident for most adults shows highest scores at GED Level 1 with somewhat lower scores at GED Level 2 and even lower scores at GED Level 3. Scores at GED levels 1 and 2 should be above 400 reflecting mastery of material up through the Jr. H. S. level. Scores at GED Level three should be at least 265, preferrably above 350.

Both the reading and arithmetic tests also generate supplemental scores in specific areas. In reading, Word Knowledge measures vocabulary, Sentence Construction measures understanding, and Information Retrieval measures the ability to find essential information. In math, Explicit measures basic computation, Applied measures use of problem solving strategies, and Interpretive measures the ability to draw conclusions based on data that is not specifically stated. In each supplemental test the scores range from zero to 500 and are interpreted the same way that the GED Level scores are interpreted. Academic training is available at the Regional Skill Center provided by the Tri-County Intermediate Unit. For information call 866-3105 ext. 223 or 734-5610 Ext. 230.

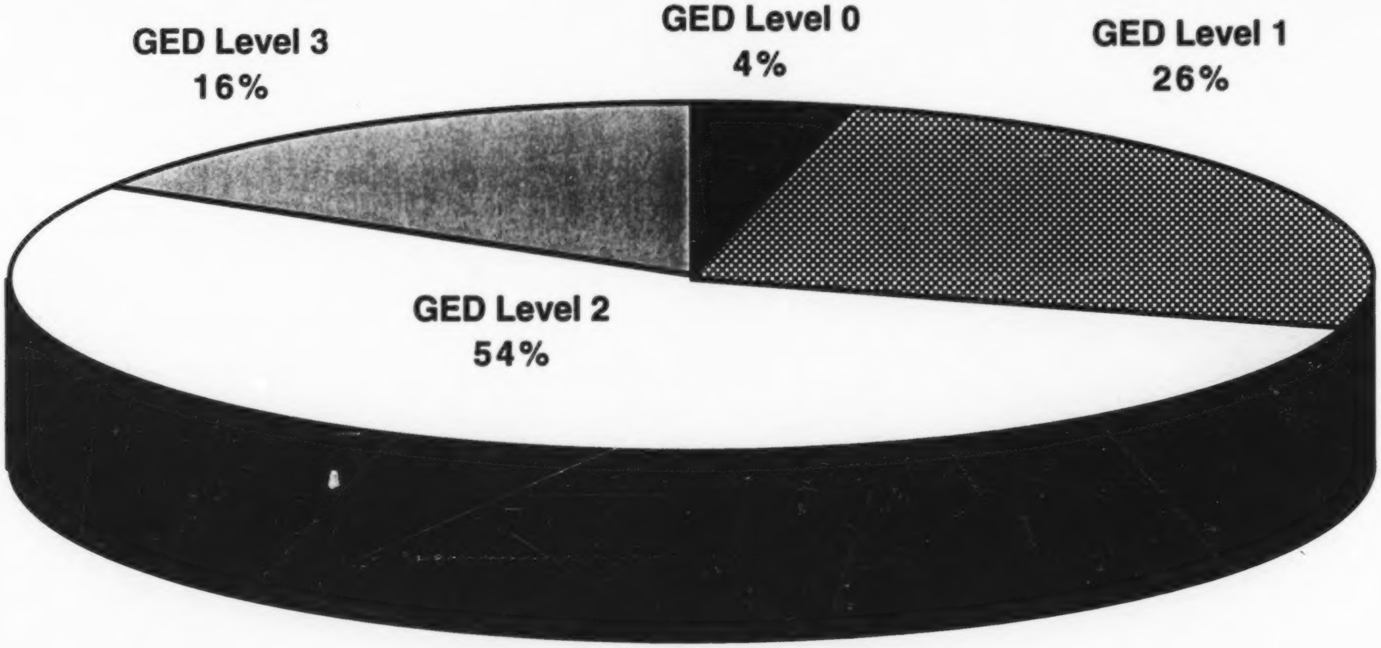
Academic mastery (score of 350) at each level of difficulty



The composite scale represents an average of scores on both the reading and math scales. It represents an "overall" estimate of academic levels. This chart shows the percentage distribution for all employees tested by the highest GED level at which a score of 350 (mastery level) was obtained.

N=80

Math mastery (score of 350) at each level of difficulty

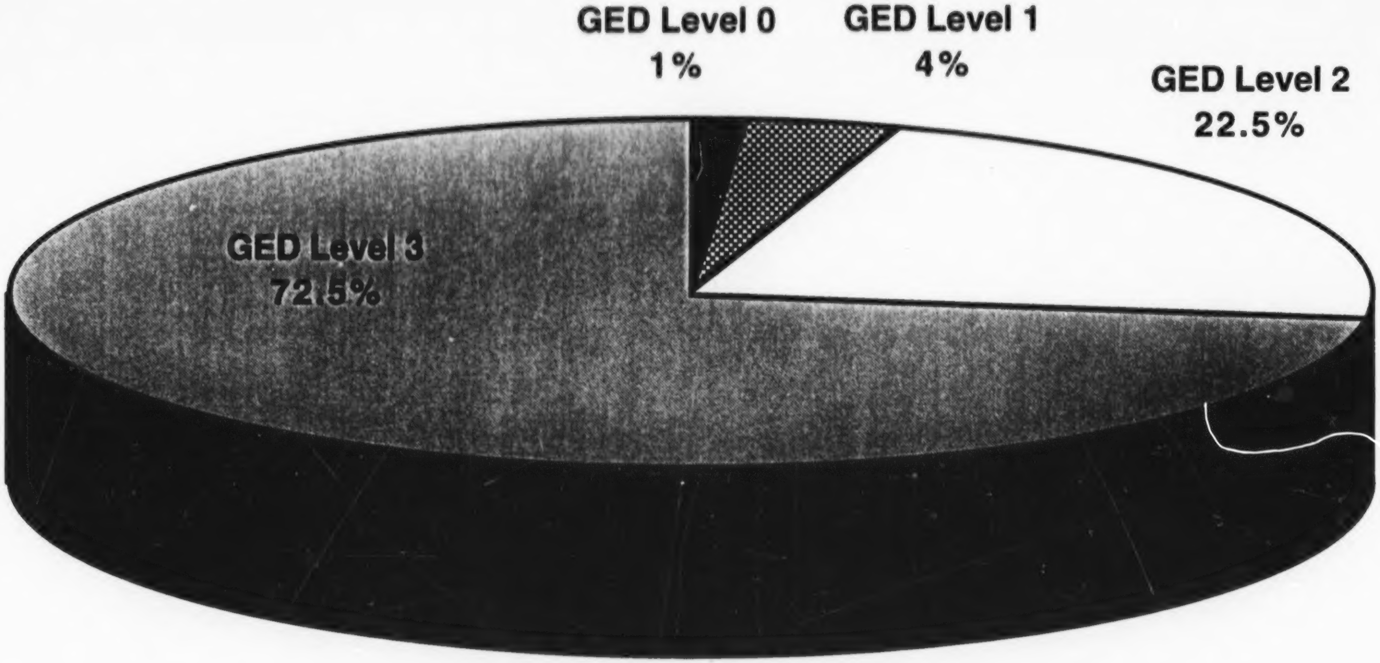


The Quantitative Test measures math skills at grade levels 4 through 10. This chart shows the percentage distribution for all employees tested by the highest GED level at which a score of 350 (mastery level) was obtained.

N=80

173

Reading mastery (score of 350) at each level of difficulty



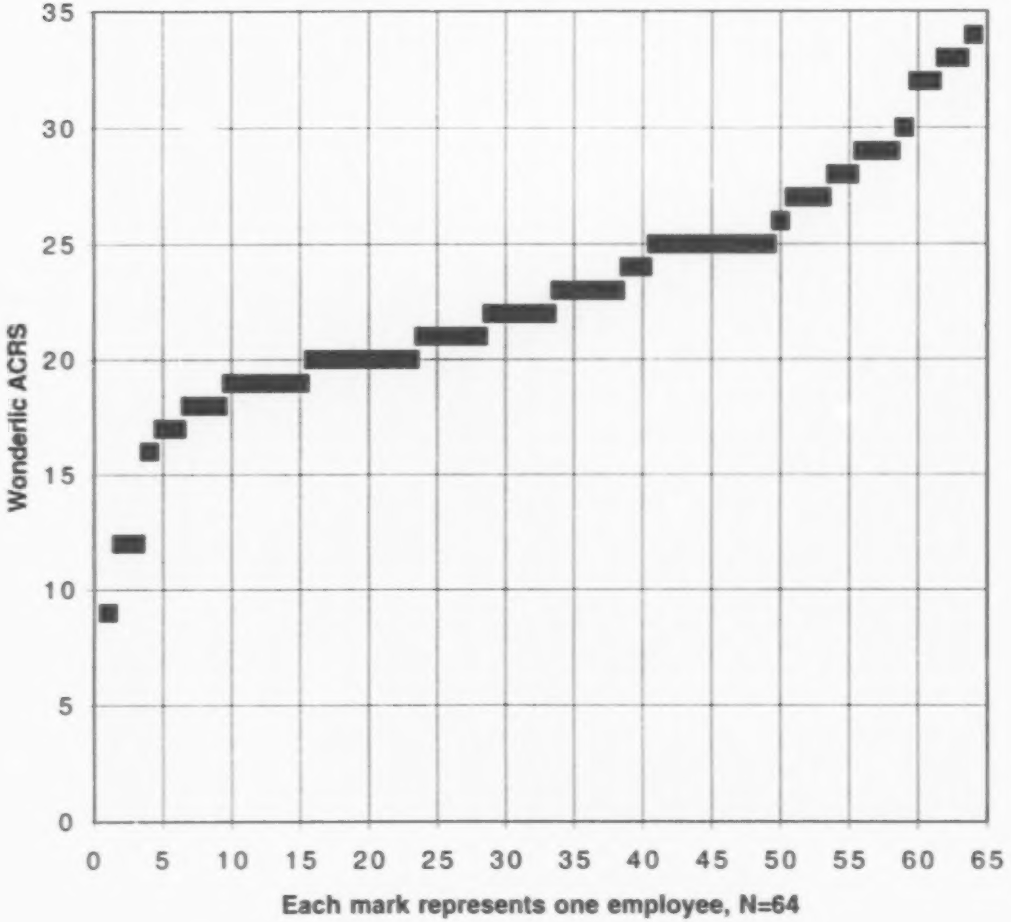
The test of Verbal Skills assesses reading ability at grade levels 4 through 10. This chart shows the percentage distribution for all employees tested by the highest GED level at which a score of 350 (mastery level) was obtained.

N=80

175

176

Distribution of Wonderlic Personnel Test Scores

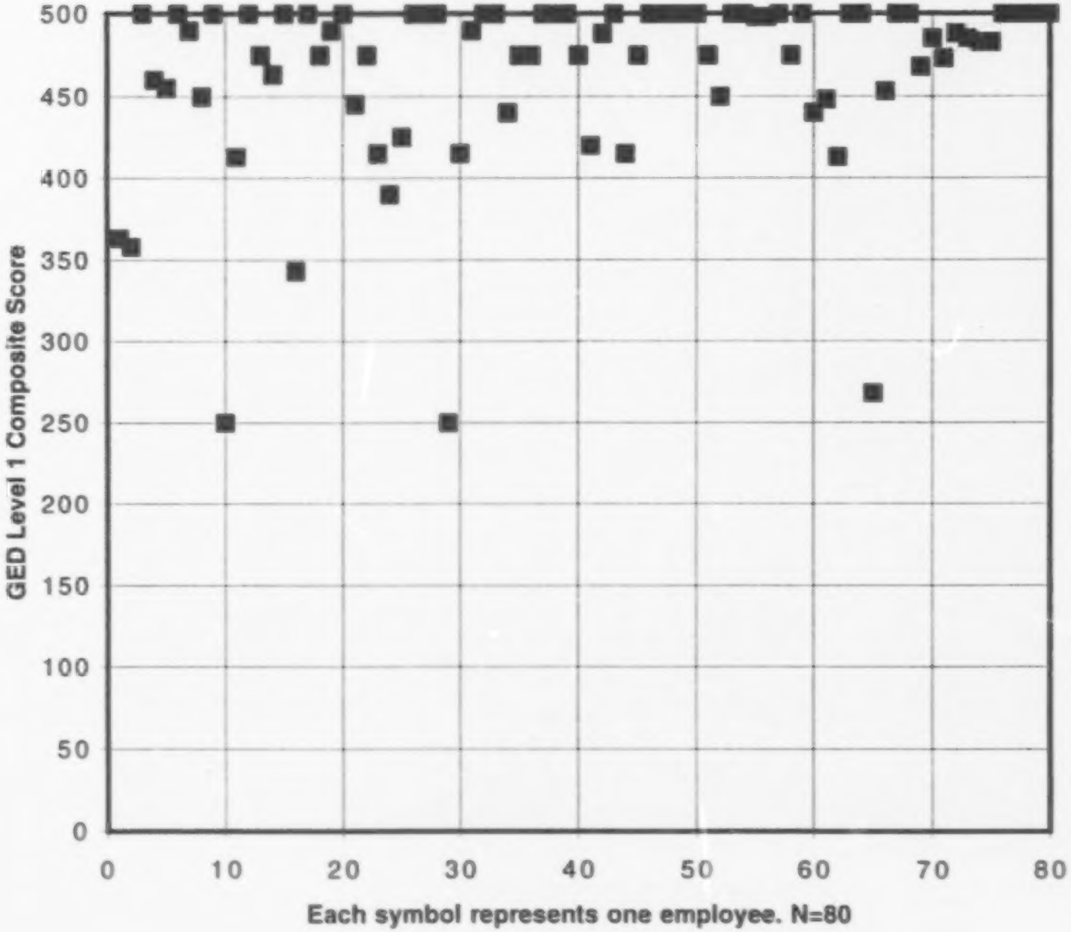


The WPT is a short form test of general cognitive ability, a measure of the individual's ability to understand directions, and solve problems. The test consists of 50 questions incorporating a wide variety of problem types. Scores on the WPT are highly related to much longer tests such as the WAIS, the Cognitive scale of the General Aptitude Test Battery and the Academic scale of the Armed Services Vocational Aptitude Battery. The following are the median WPT scores by occupation:

Packer, Material Handler - 12 to 15
Assembler, Nurse Aide - 16
Labor Unskilled - 17
Quality Control Checker, Data entry 19
Teller, Clerical general - 20
General office, Auto sales - 21
Accounting clerk, Technician - 22
Design drafting, Lab Tech -23
Registered nurse, Store mgr. - 24
Adjuster, General manager - 25
Accountant, Supervisor - 26
Chemist, Engineer, Executive - 28
Attorney, Research Asst. - 30

National mean score = 21 based on a sample of 118,000 job applicants.

GED Level 1 Composite of Reading and Quantitative Scores

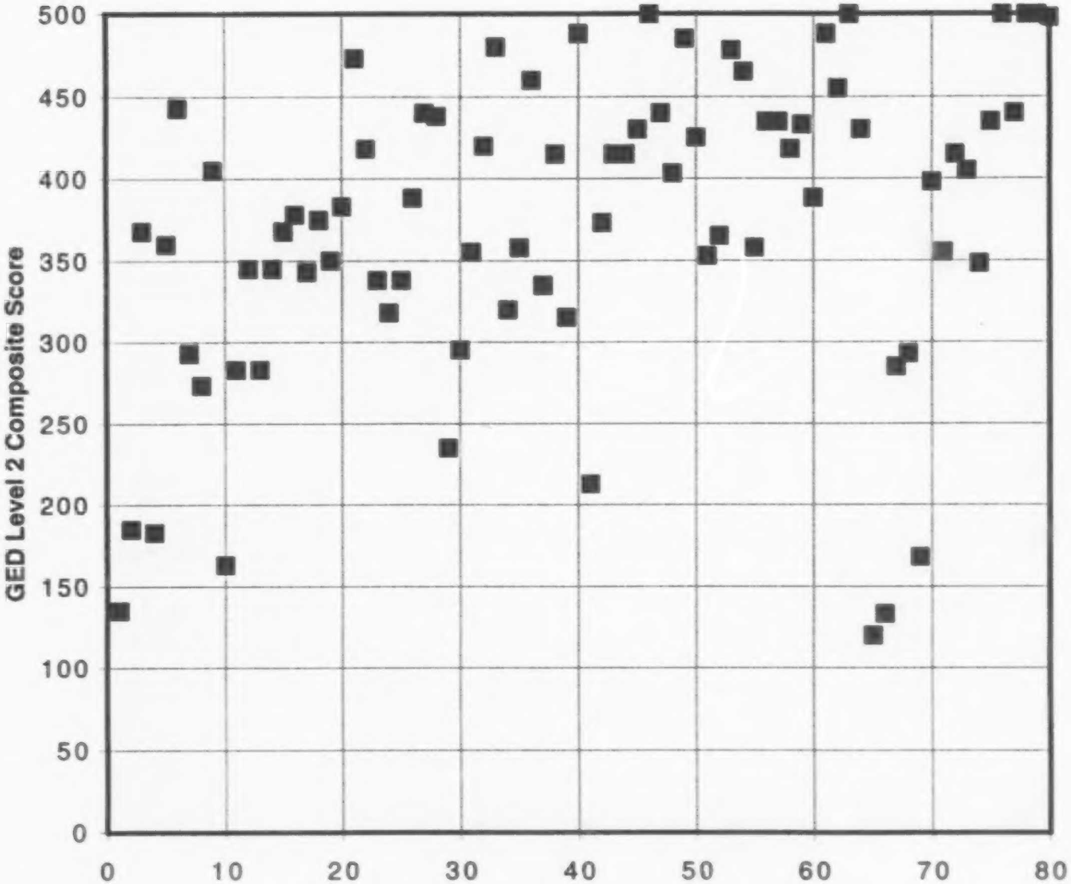


The Composite score is a combination of the scores from both the reading and quantitative tests. In effect, it is an average of the two and may tend to mask specific deficits in either reading or math.

GED Level 1 measures basic skills, similar to material which is taught in grades four through six. The math skills at this level are straightforward, reflecting basic computation. The reading tasks involve simple vocabulary and grammar.

Any scores below 450 at this level are indicative of some difficulty. Scores below 350 indicate that fewer than 85% of the problems at this basic level were answered correctly. Any scores below 265 indicate significant difficulty and consideration should be given to further testing to identify the cause of the deficiencies.

GED Level 2 Composite of Reading and Quantitative Scores



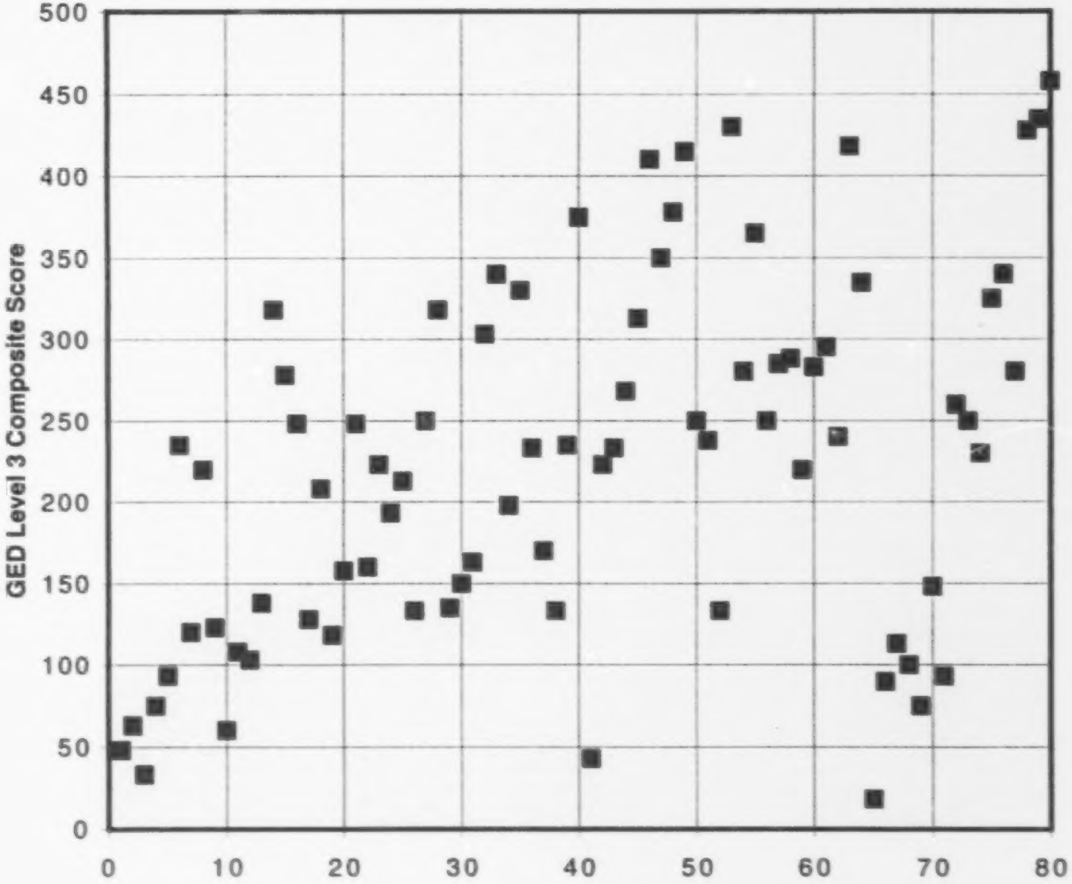
Each symbol represents one employee. N=80

The Composite score is a combination of the scores from both the reading and quantitative tests. In effect, it is an average of the two and may tend to mask specific deficits in either reading or math.

GED Level 2 measures general skills, similar to material which is taught in the grades seven through nine. The math skills at this level involve fractions and decimals and require some practical problem solving. The reading tasks involve more difficult vocabulary and more complex grammar than level 1.

Scores below 350 indicate that fewer than 85% of the problems at this Jr. H.S. level were answered correctly. Any scores below 265 indicates that fewer than 65% of the questions were answered correctly. Scores below 100 indicate significant deficiencies.

GED Level 3 Composite of Reading and Quantitative Scores



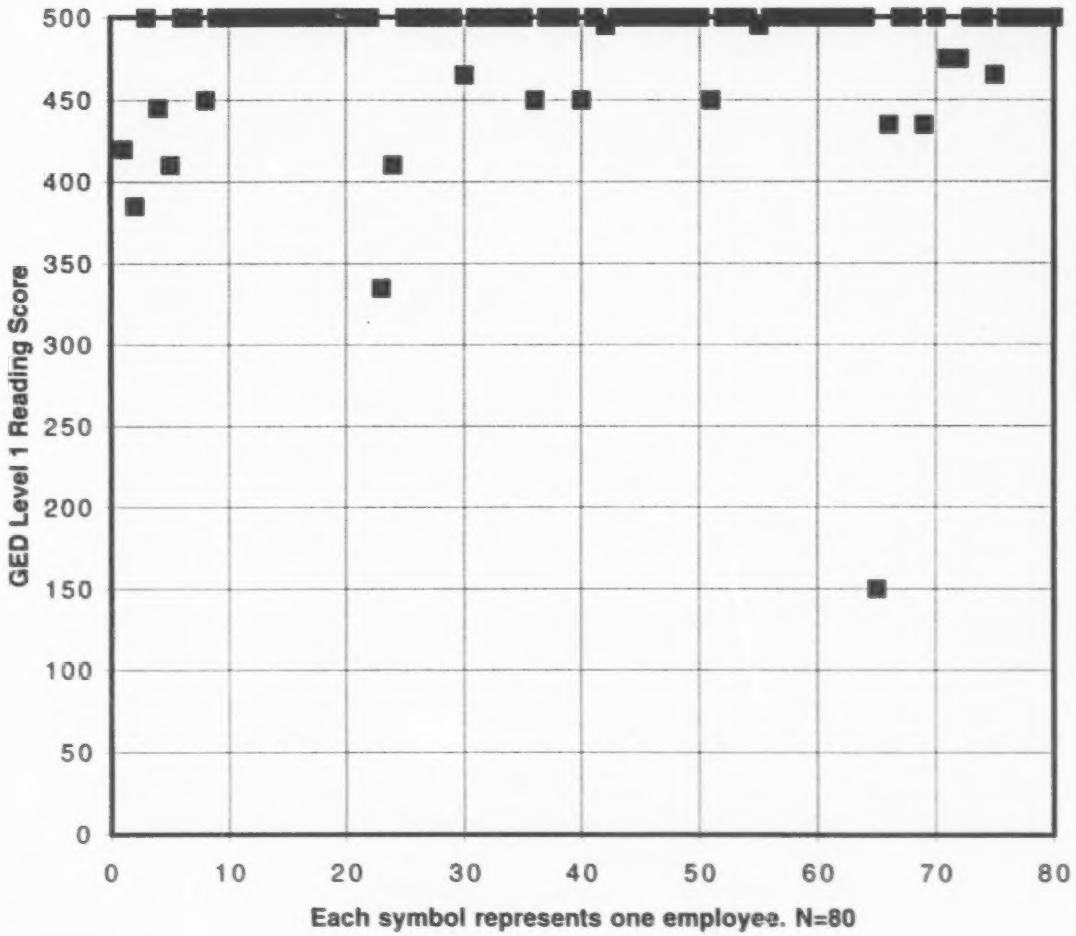
Each symbol represents one employee. N=80

The Composite score is a combination of the scores from both the reading and quantitative tests. In effect, it is an average of the two and may tend to mask specific deficits in either reading or math.

GED Level 3 measures advanced skills, similar to material which is taught in grades nine and ten. The math skills at this level involve practical problem solving including some basic geometry and algebra. The reading tasks involve difficult vocabulary and require higher level comprehension and generalization.

Scores below 350 indicate that fewer than 85% of the problems at the H.S. level were answered correctly. Any scores below 265 indicates that fewer than 65% of the questions were answered correctly. Individuals wishing to pursue technical training should have scores above 350.

GED Level 1 Reading Scores

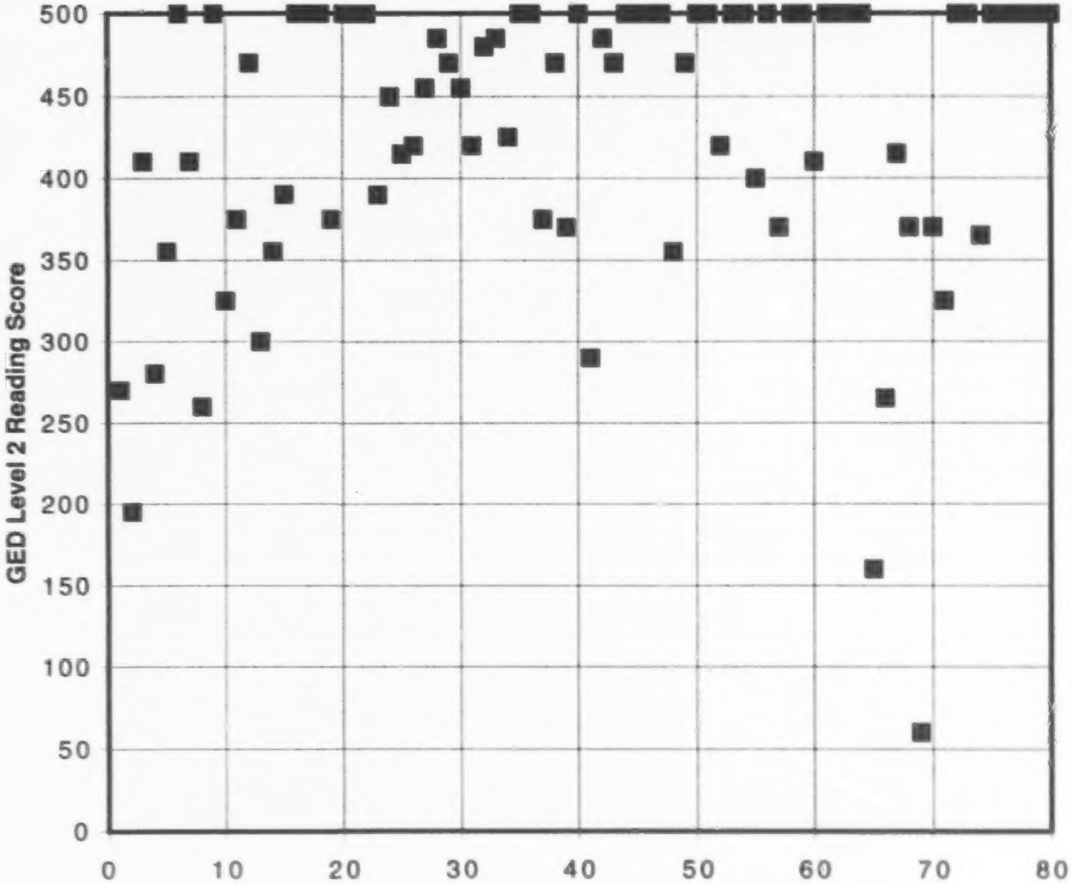


GED Level 1 measures basic skills, similar to material which is taught in the grades four and five The reading tasks involve simple vocabulary and grammar and comprehension questions generally are straightforward and obvious.

Any scores below 450 at this level are indicative of some difficulty. Scores below 350 indicate that fewer than 85% of the problems at this basic level were answered correctly. Any scores below 265 indicate significant difficulty and consideration should be given to further testing to identify the cause of the deficiencies.

Individuals considering formal post-secondary technical training should show scores above 450 at the GED 1 level of difficulty.

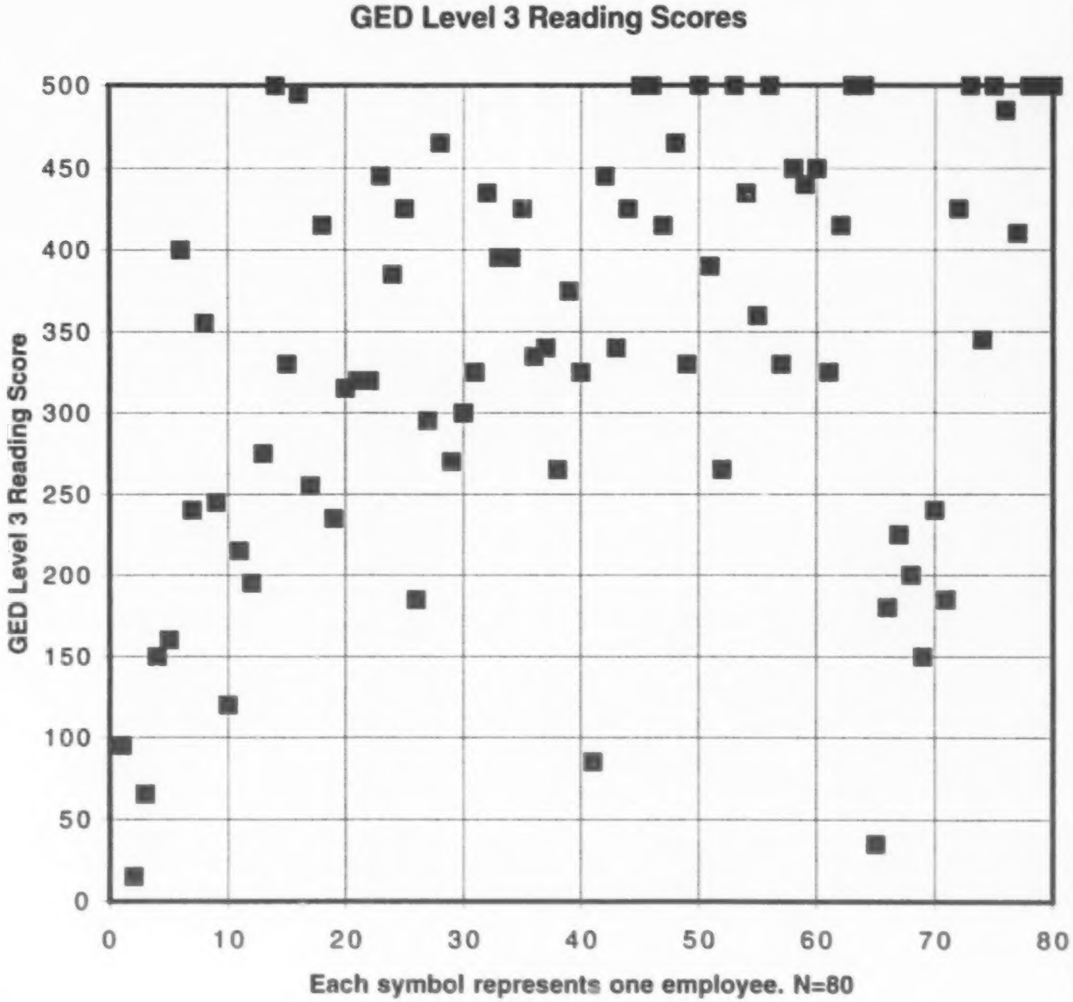
GED Level 2 Reading Scores



Each symbol represents one employee. N=80

GED Level 2 measures general skills, similar to material which is taught in grades six through seven. Reading tasks at Level 2 involve more difficult vocabulary and somewhat more complex grammatical styles than level 1. The comprehension questions are not so obvious and require the individual to draw conclusions or to search out answers. Level 2 requires the individual to read at a rate of 190-215 words per minute. Reading tasks include materials similar to adventure stories and comic books, looking up unfamiliar words in a dictionary, spelling and pronounciation.

Scores below 350 indicate that fewer than 85% of the problems at this Jr. H.S. level were answered correctly. Scores below 265 indicate that fewer than 65% of the questions were answered correctly. Scores below 100 indicate significant deficiencies.



Each symbol represents one employee. N=80

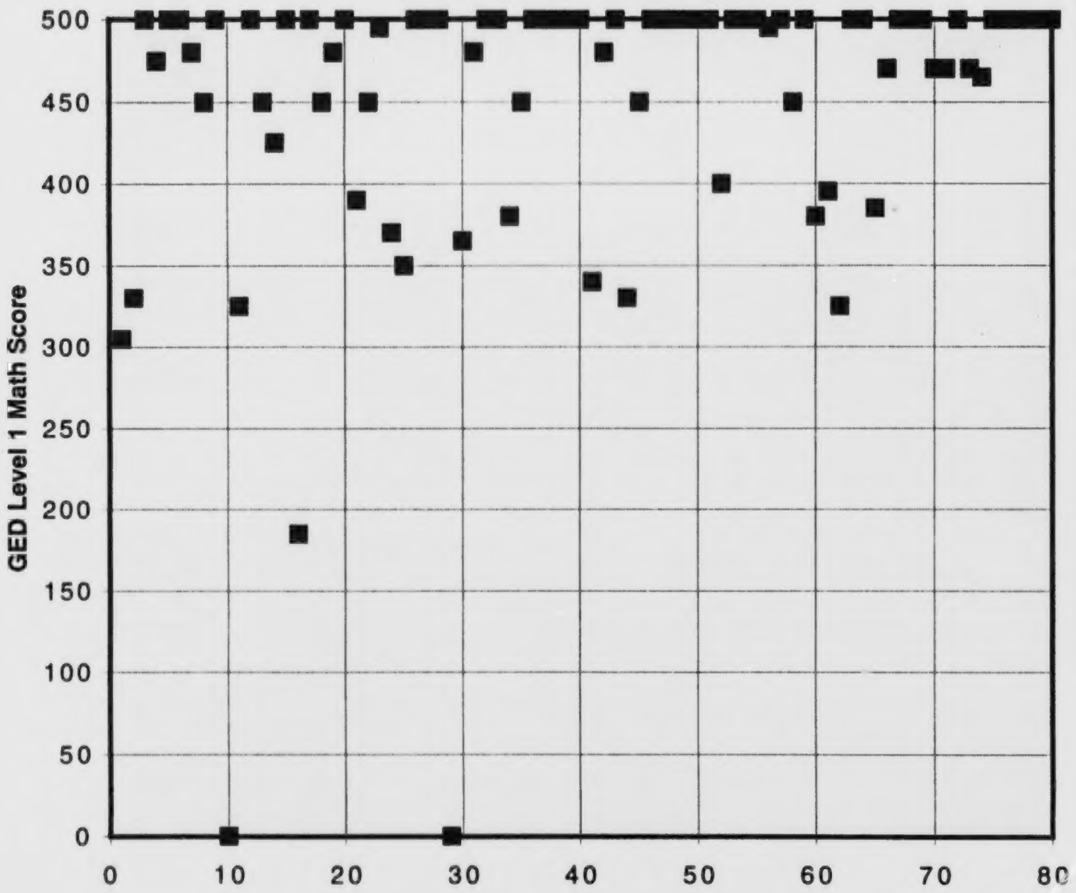
GED Level 3 measures advanced skills, similar to material which is taught in grades eight through ten. The reading tasks involve abstract vocabulary and complex grammatical styles. Types of material used in testing including reading similar to novels, magazines, atlases, and encyclopedias. The applicant is asked to read safety rules, instructions for the use of shop tools, and methods and procedures in mechanical drawing and layout.

Scores below 350 indicate that fewer than 85% of the problems at the H.S. level were answered correctly. Scores below 265 indicates that fewer than 65% of the questions were answered correctly. Individuals wishing to pursue post-secondary technical training should show scores of 350 or higher.

Speed may be a factor in obtaining high scores at GED Level 3.

190

GED Level 1 Quantitative Scores



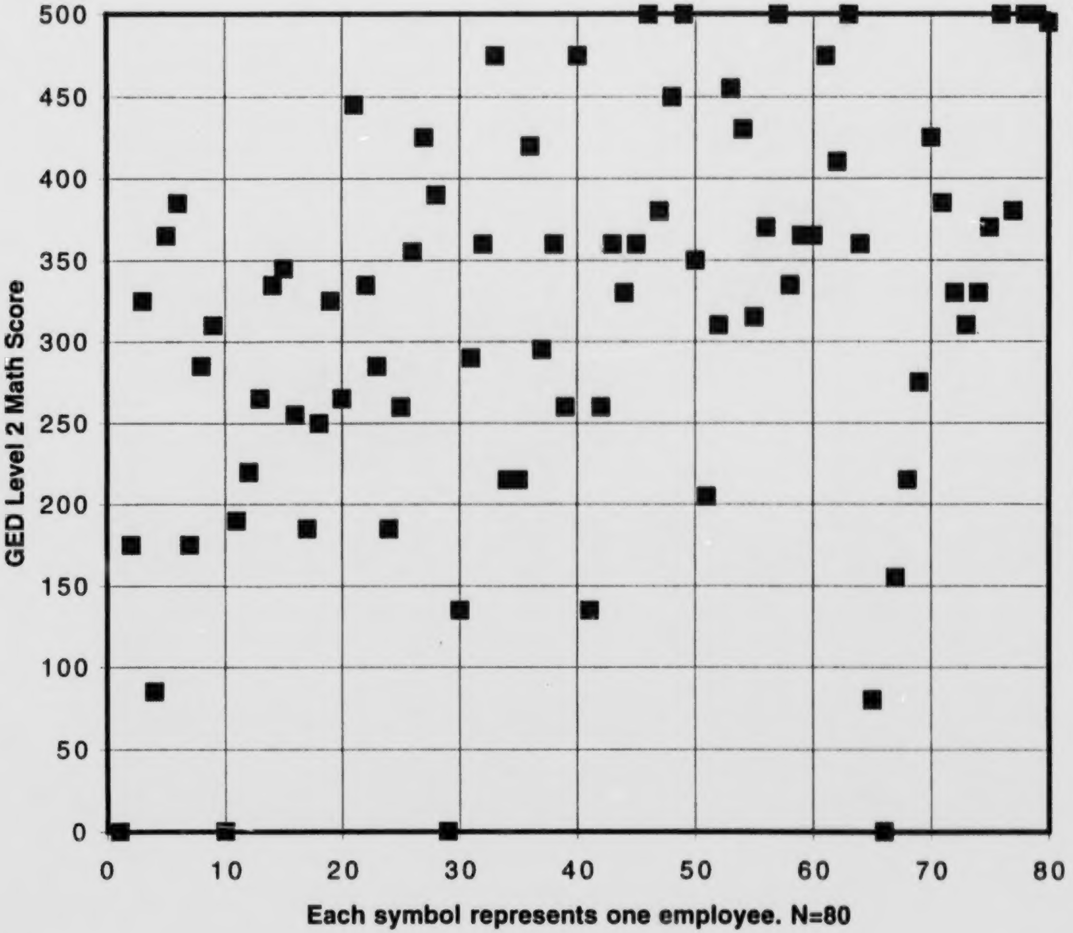
Each symbol represents one employee. N=80

GED Level 1 measures basic skills, similar to material which is taught in grades four and five The computational tasks involve simple calculations, centering on the four basic processes with whole numbers.

Any scores below 450 at this level are indicative of some difficulty. Scores below 350 indicate that fewer than 85% of the problems at this basic level were answered correctly. Any scores below 265 indicates significant difficulty and consideration should be given to further testing to identify the cause of the deficiencies.

Individuals considering formal post-secondary technical training should show scores above 400 at the GED 1 level of difficulty.

GED Level 2 Quantitative Scores

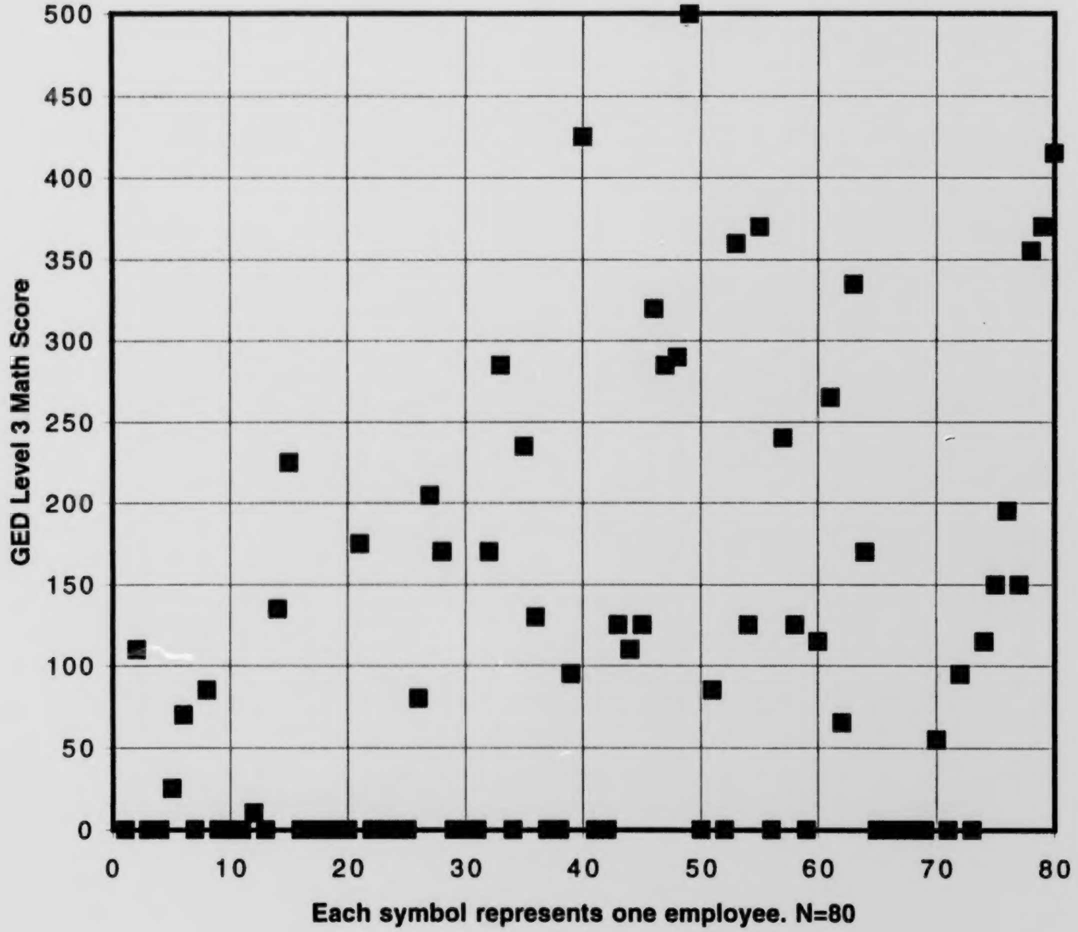


Each symbol represents one employee. N=80

GED Level 2 measures general skills, similar to material which is taught in grades six through eight. Arithmetic tasks at Level 2 include the ability to add, subtract, multiply and divide all units of measure. It also tests the ability to perform the four operations with like common and decimal fractions, to compute ratio, rate, and percent. It also measures the ability to interpret bar graphs and to perform arithmetic operations involving all American monetary units.

Scores below 350 indicate that fewer than 85% of the problems at this Jr. H.S. level were answered correctly. Scores below 265 indicate that fewer than 65% of the questions were answered correctly. Scores below 100 indicate significant deficiencies.

GED Level 3 Quantitative Scores



GED Level 3 measures advanced skills, similar to material which is taught in grades nine and ten. The quantitative tasks require more complex solutions, frequently involving multiple step computations. Specific items measured at GED Level 3 include computing discounts, interest, profit and loss, commission, markup, ratio and proportion. In Algebra it measures the ability to calculate variables and formulas' monomials, and polynomials. In Geometry it measures the ability to calculate plane and solid figures, circumference, area, volume, and understanding of angles and pairs of angles.

Scores below 350 indicate that fewer than 85% of the problems at the H.S. level were not answered correctly. Scores below 265 indicates that fewer than 65% of the questions were answered correctly. Individuals wishing to pursue post-secondary technical training should show scores of 350 or higher.

Speed of performance may be a factor at GED Level 3.

Summary of Performance for: ADULT STW PARTICIPANTS

	Mean Score	Median Score	St. Dev	Count
Reading GED Level 1	482	500	49	80
Reading GED Level 2	429	470	92	80
Reading GED Level 3	342	350	129	80
Word Knowledge	468	500	72	80
Sentence Construction	382	385	101	80
Information Retrieval	429	470	90	80
Quantitative GED Level 1	448	500	96	80
Quantitative GED Level 1	315	333	127	80
Quantitative GED Level 3	107	68	131	80
Explicit	383	410	118	80
Applied	305	300	116	80
Interpretive	154	120	156	80
Composite GED Level 1	465	488	55	80
Composite GED Level 2	372	386	95	80
Composite GED Level 3	225	233	110	80

Verbal (Reading)

	Below GED 1	GED Level 1	GED Level 2	GED Level 3
# Scoring Above 350 @	1	3	18	58
% Scoring Above 350 @	1.25%	3.75%	22.50%	72.50%

Quantitative (Math)

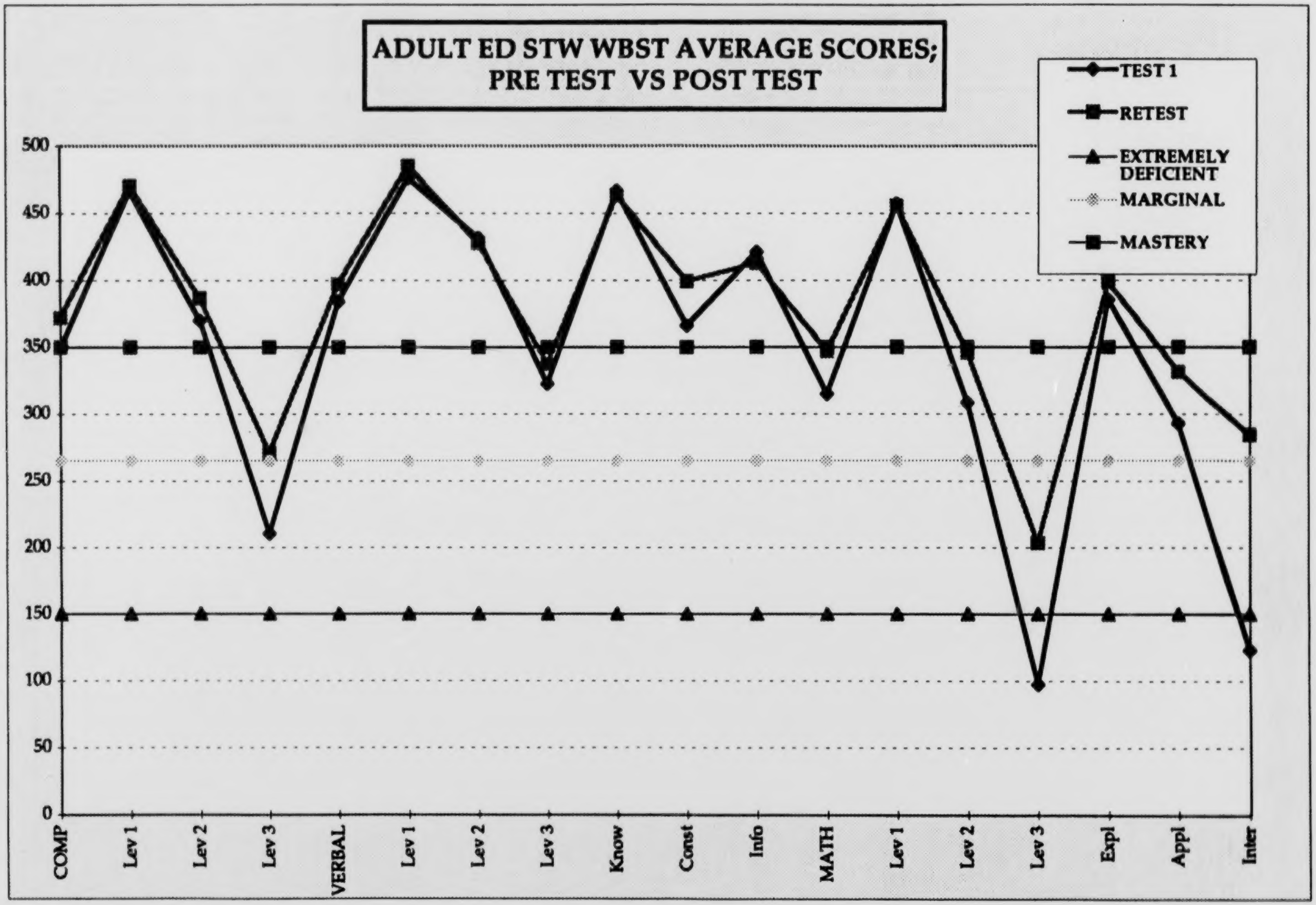
	Below GED 1	GED Level 1	GED Level 2	GED Level 3
# Scoring Above 350 @	3	21	43	13
% Scoring Above 350 @	3.75%	26.25%	53.75%	16.25%

Composite (Average of Reading and Math)

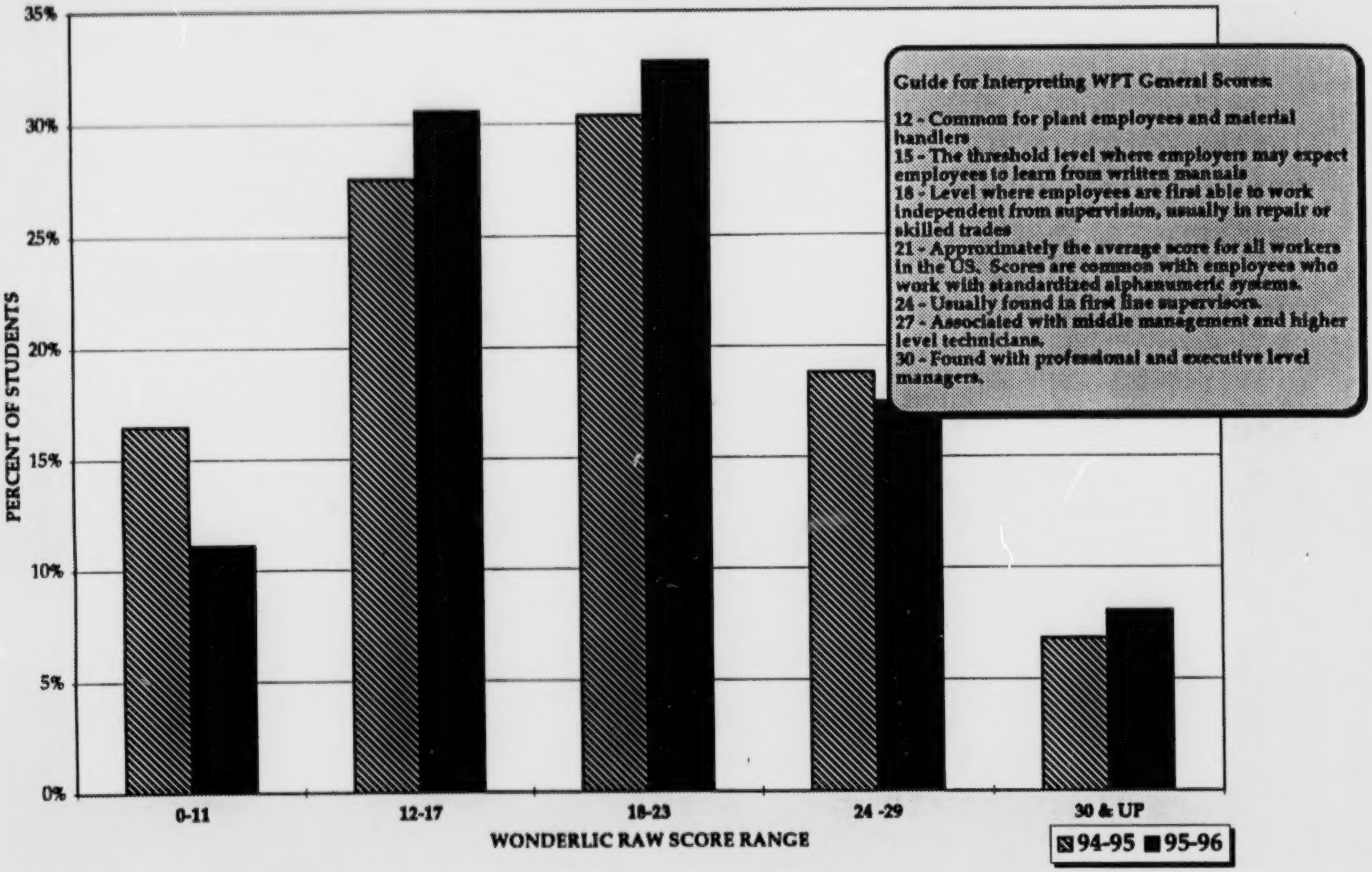
	Below GED 1	GED Level 1	GED Level 2	GED Level 3
# Scoring Above 350 @	2	7	43	28
% Scoring Above 350 @	2.50%	8.75%	53.75%	35.00%

	Mean Score	Median Score	St. Dev	Count
Wonderlic Personnel Test	22.78	22	5.05	64

AE STW Chart 4



A COMPARISON OF WONDERLIC SCORES, REGIONAL OCCUPATIONAL SKILL CENTER, 94-95 SCORES VS. 95-96 SCORES



Guide for Interpreting WPT General Scores:

12 - Common for plant employees and material handlers
15 - The threshold level where employers may expect employees to learn from written manuals
18 - Level where employees are first able to work independent from supervision, usually in repair or skilled trades
21 - Approximately the average score for all workers in the US. Scores are common with employees who work with standardized alphanumeric systems.
24 - Usually found in first line supervisors.
27 - Associated with middle management and higher level technicians.
30 - Found with professional and executive level managers.

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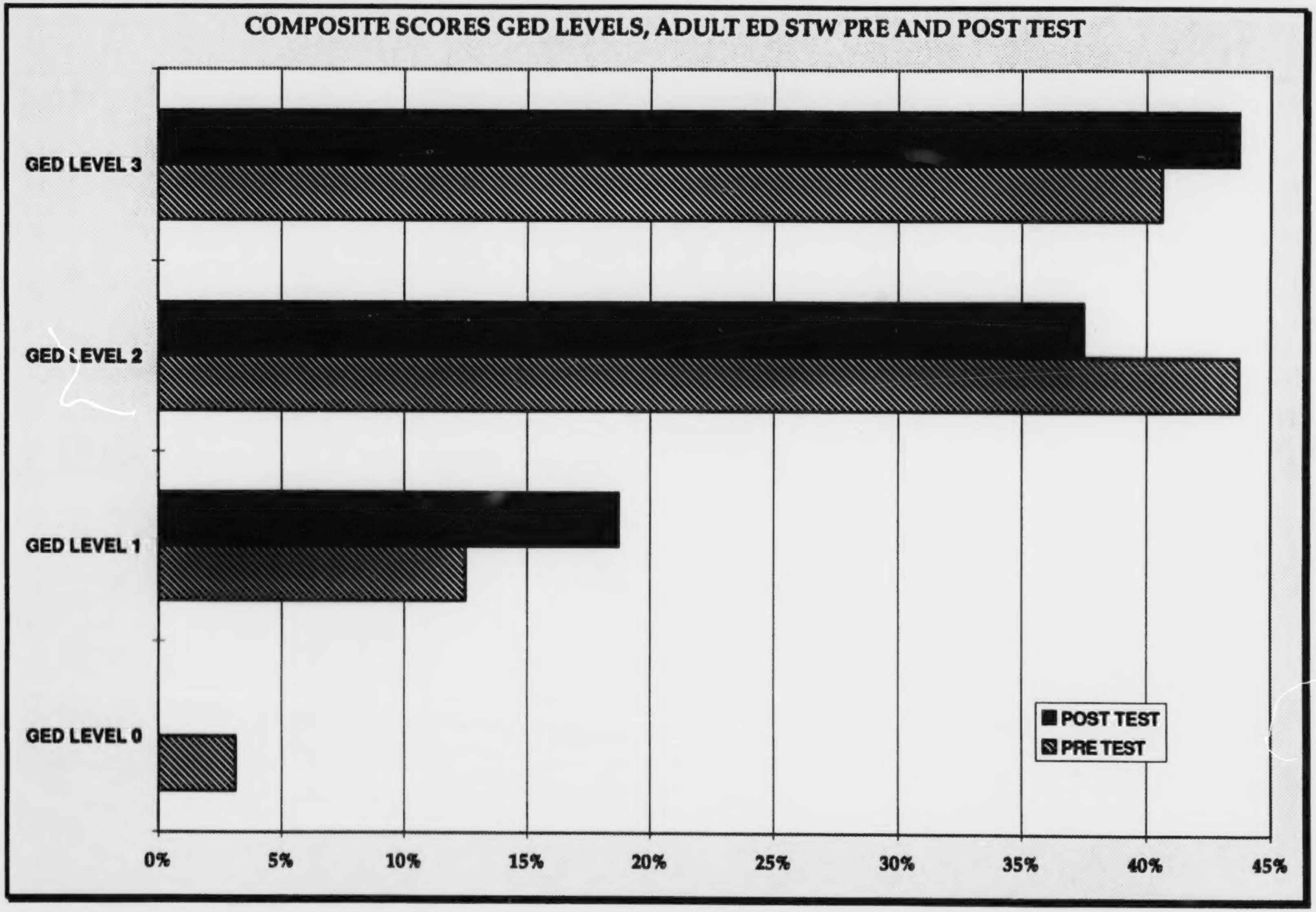
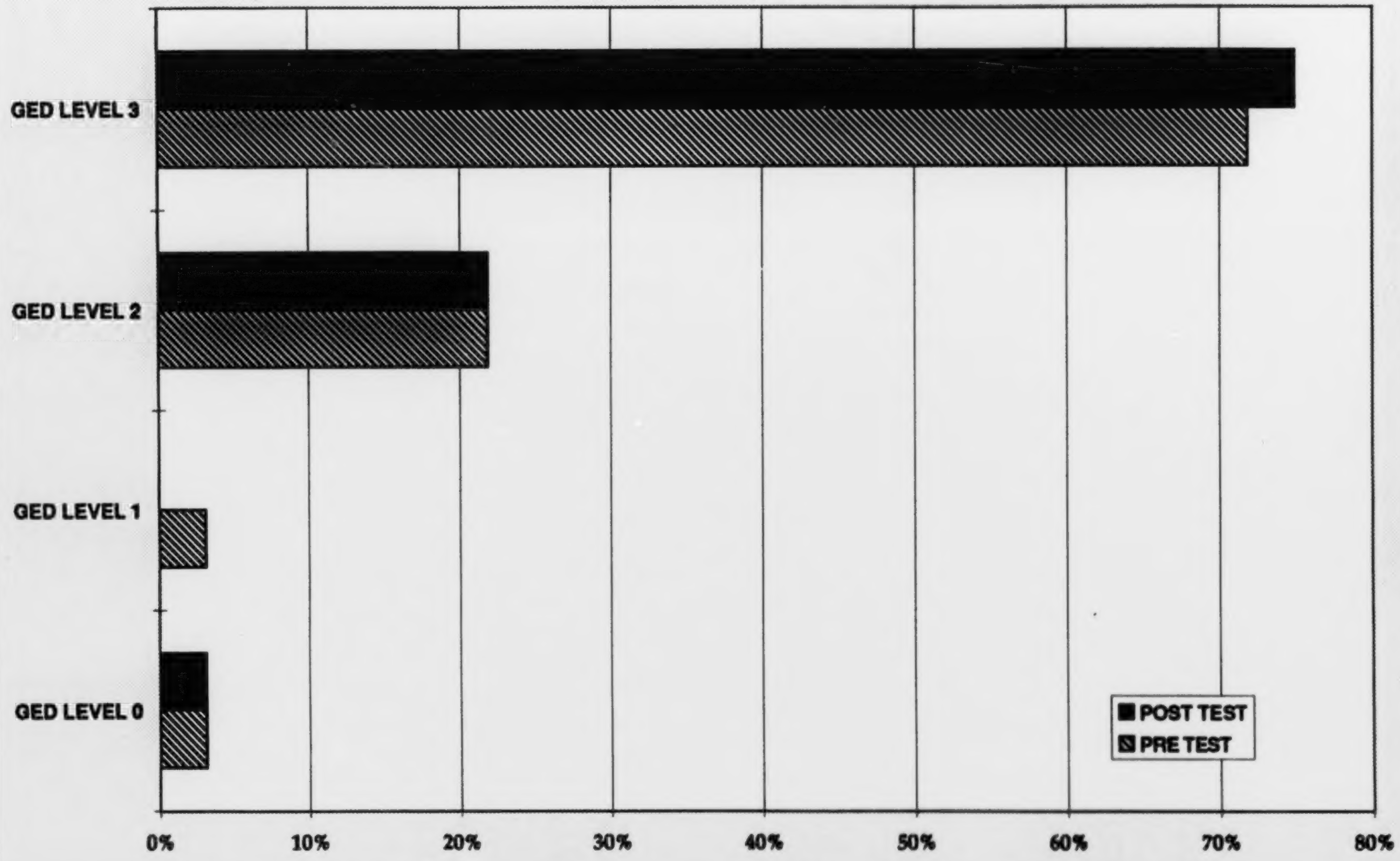
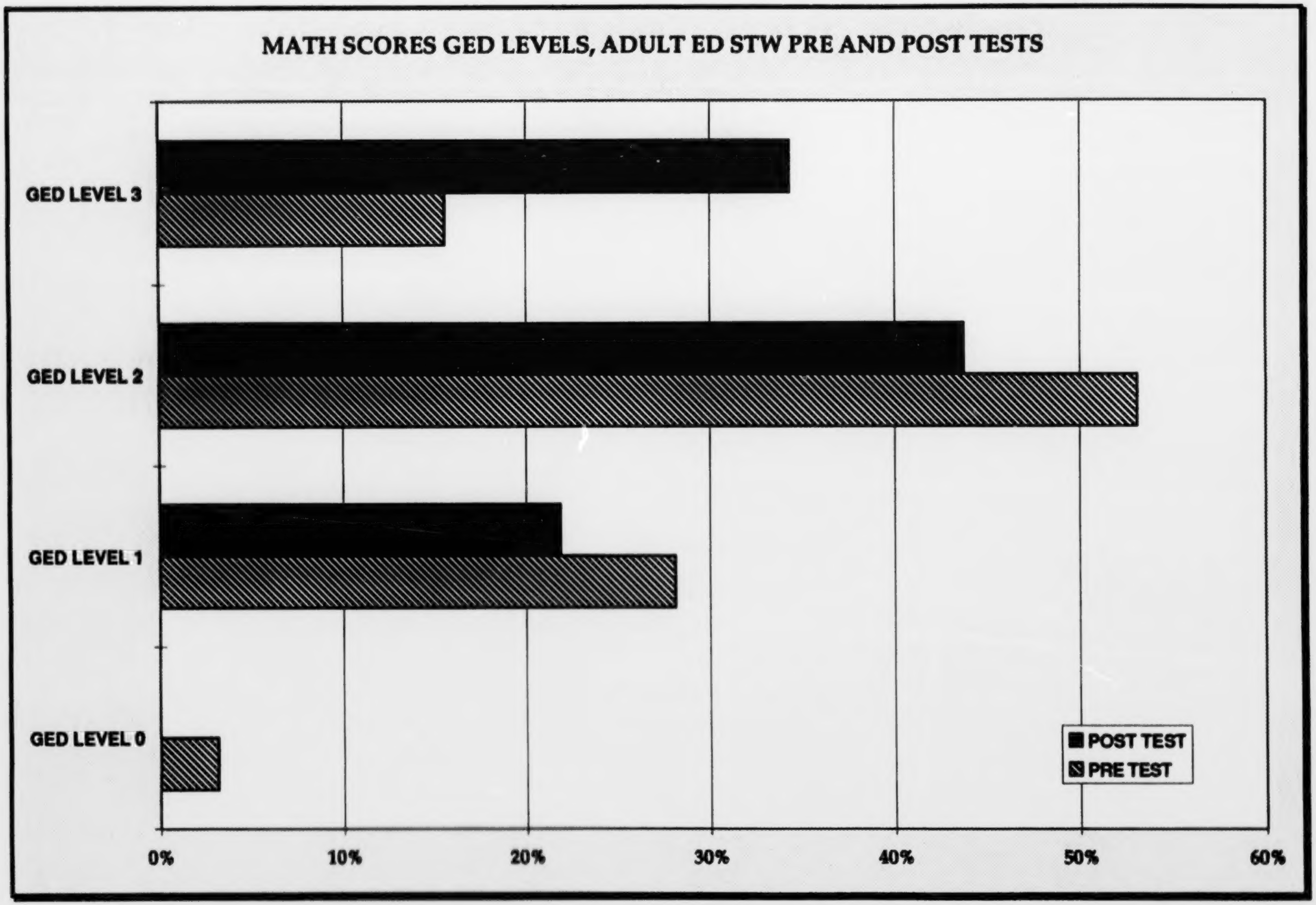

COMPOSITE SCORES GED LEVELS, ADULT ED STW PRE AND POST TEST
GED LEVEL 3
GED LEVEL 2
GED LEVEL 1
GED LEVEL 0
POST TEST
PRE TEST
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%

VERBAL SCORES GED LEVELS, ADULT ED STW PRE AND POST TEST

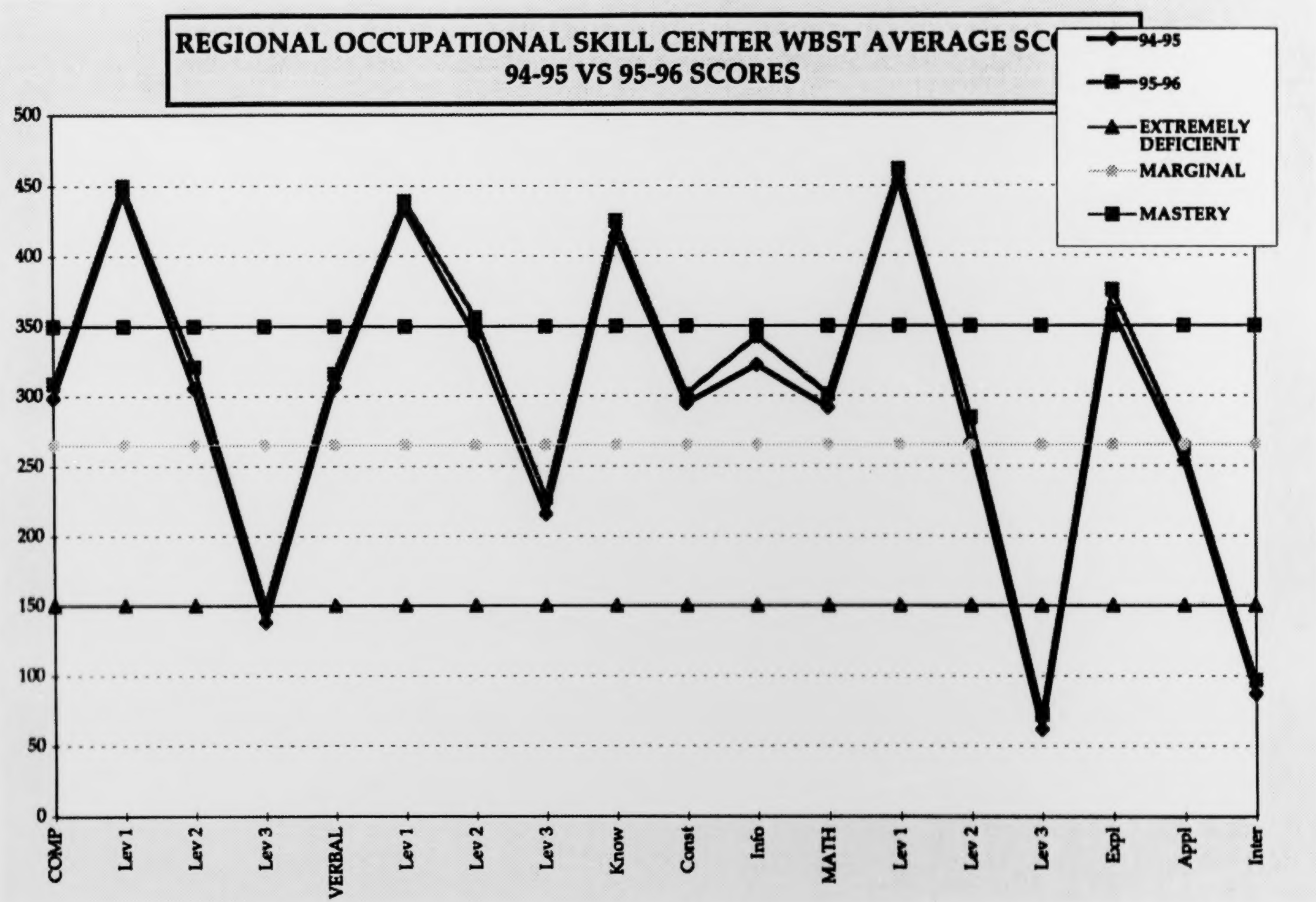



MATH SCORES GED LEVELS, ADULT ED STW PRE AND POST TESTS
GED LEVEL 3
GED LEVEL 2
GED LEVEL 1
GED LEVEL 0
POST TEST
PRE TEST
0%
10%
20%
30%
40%
50%
60%

206

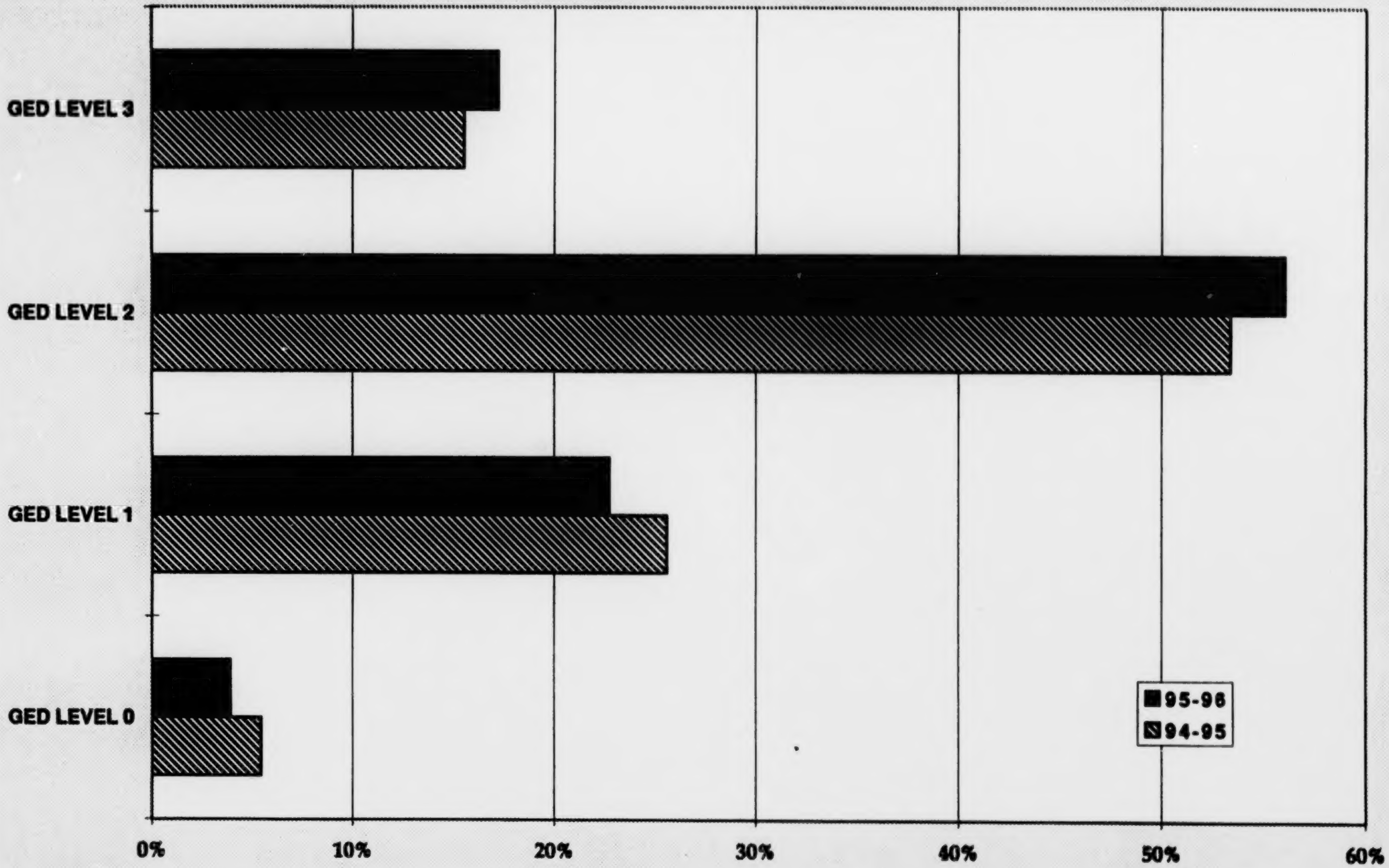
207

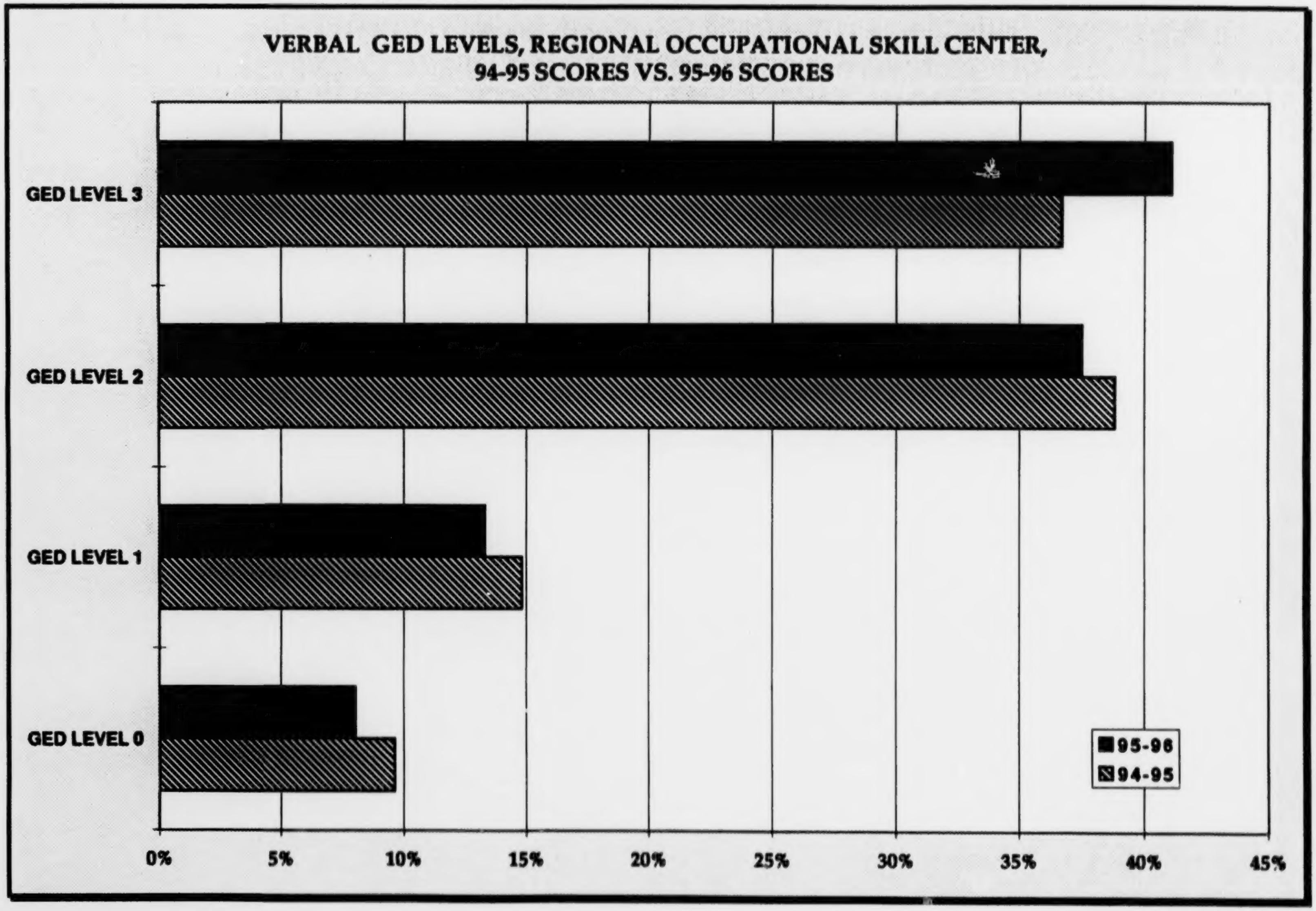
ROSC



REGIONAL OCCUPATIONAL SKILL CENTER WBST AVERAGE SC
94-95 VS 95-96 SCORES

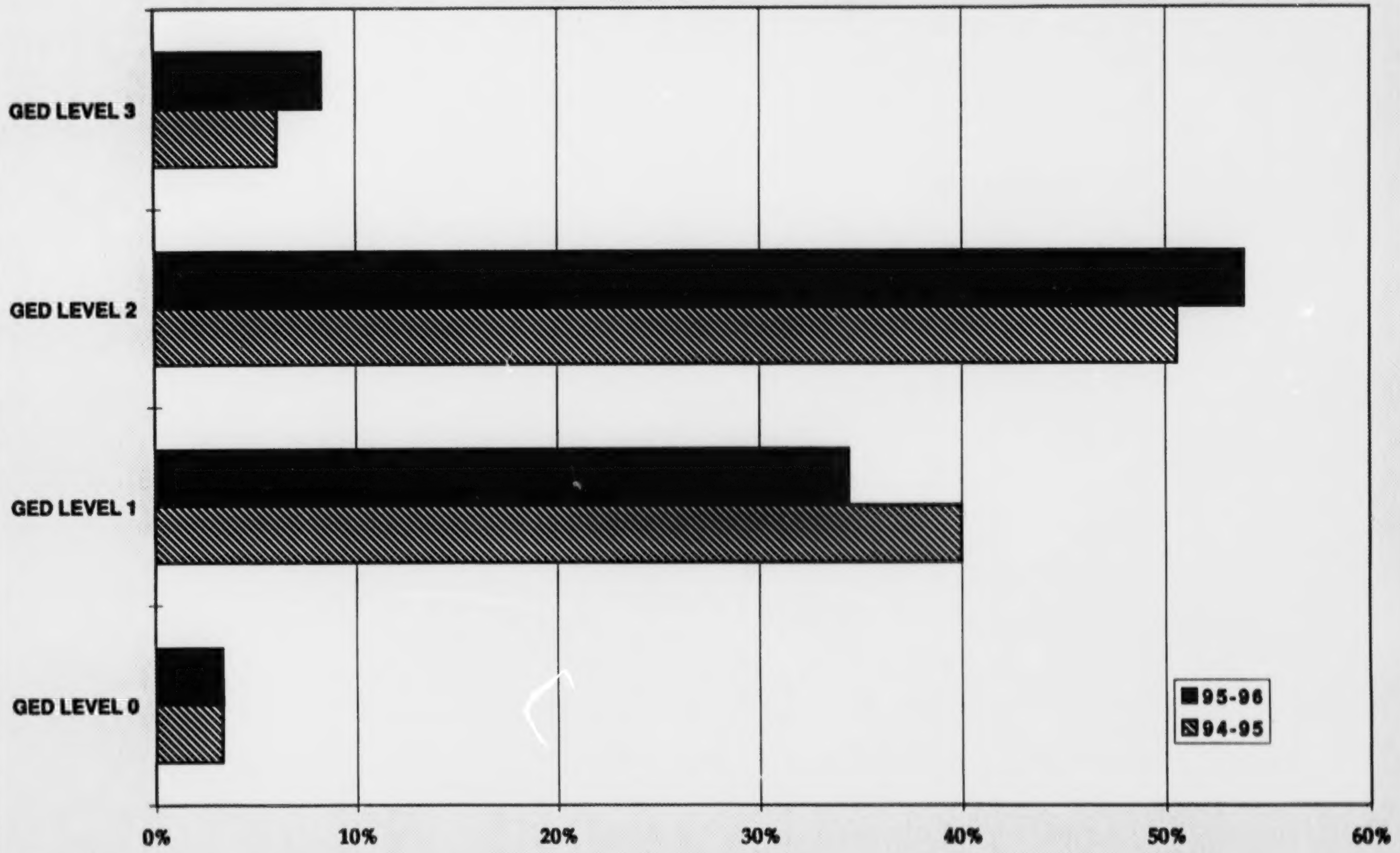
COMPOSITE GED LEVELS, REGIONAL OCCUPATIONAL SKILL CENTER, 94-95 SCORES VS. 95-96 SCORES





VERBAL GED LEVELS, REGIONAL OCCUPATIONAL SKILL CENTER, 94-95 SCORES VS. 95-96 SCORES

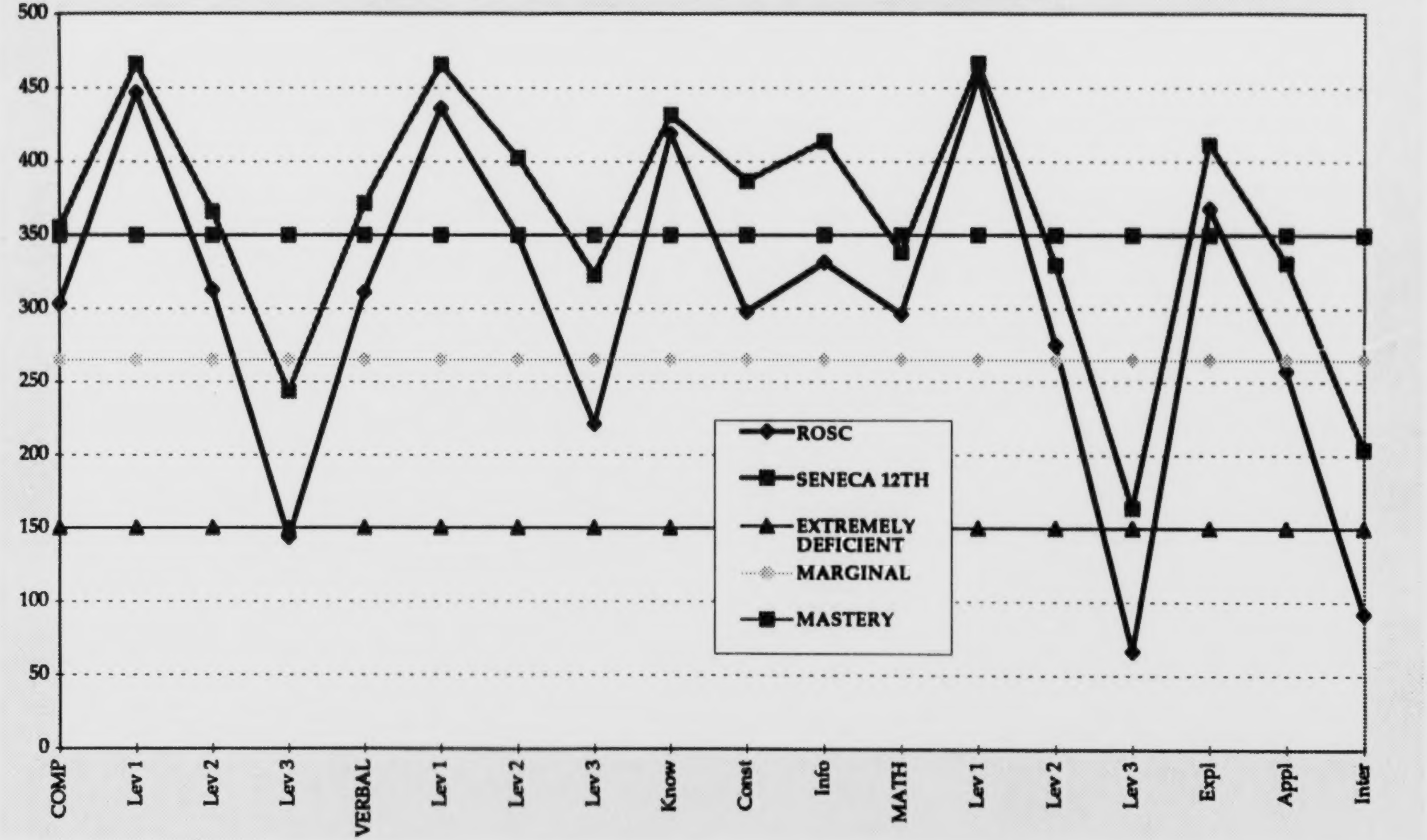
MATH GED LEVELS, REGIONAL OCCUPATIONAL SKILL CENTER, 94-95 SCORES VS. 95-96 SCORES



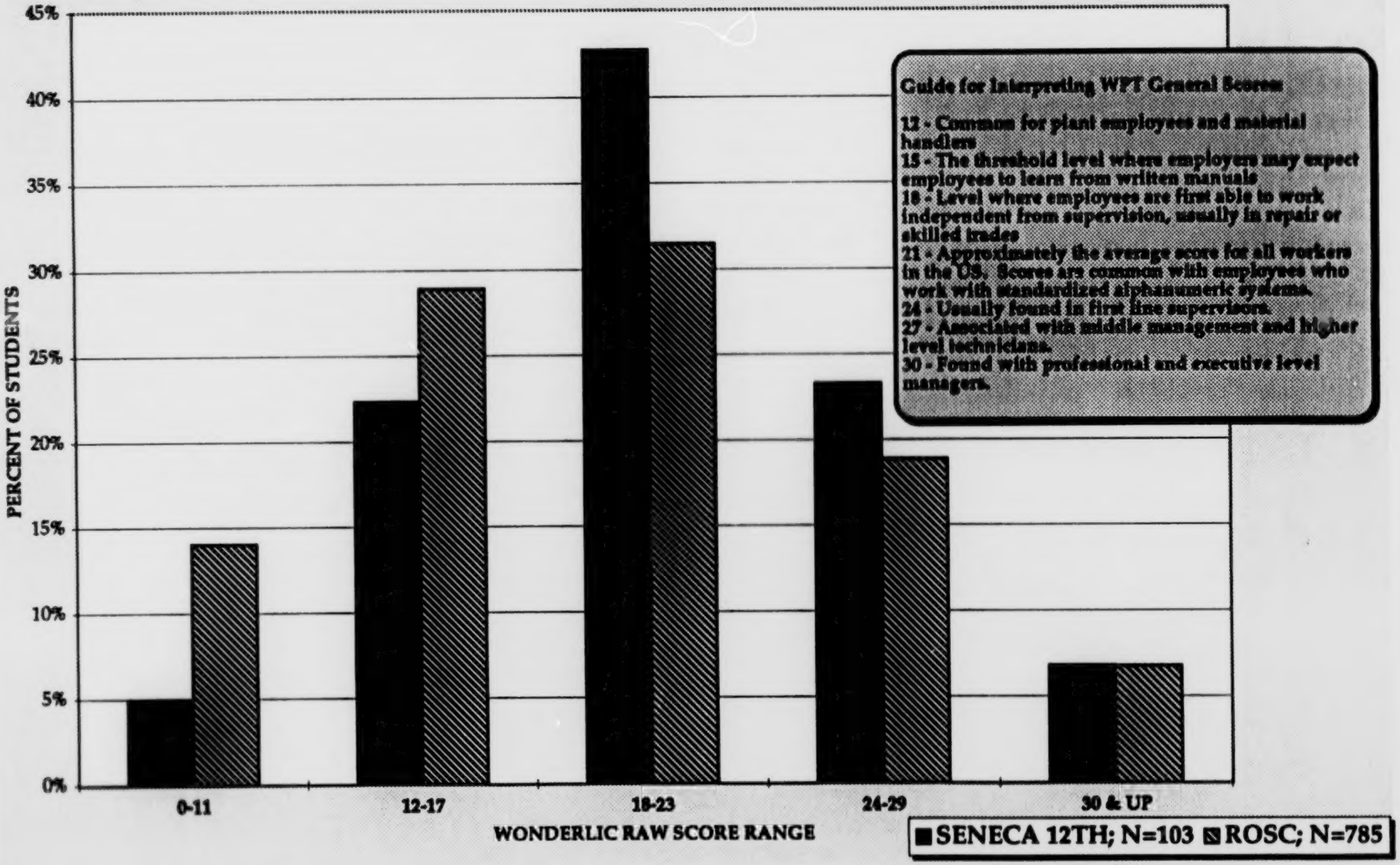
COMPARISONS OF ADULT TEST PERFORMANCE

COMPARISONS OF SCHOOL AGE TEST PERFORMANCE

WBST AVERAGE SCORES; REGIONAL OCCUPATIONAL SKILL CENTER VS. SENECA HIGH 12TH GRADE



ROSC VS SENECA 12TH



Guide for Interpreting WPT General Scores

12 - Common for plant employees and material handlers
15 - The threshold level where employers may expect employees to learn from written manuals
18 - Level where employees are first able to work independent from supervision, usually in repair or skilled trades
21 - Approximately the average score for all workers in the US. Scores are common with employees who work with standardized alphanumeric systems.
24 - Usually found in first line supervisors.
27 - Associated with middle management and higher level technicians.
30 - Found with professional and executive level managers.

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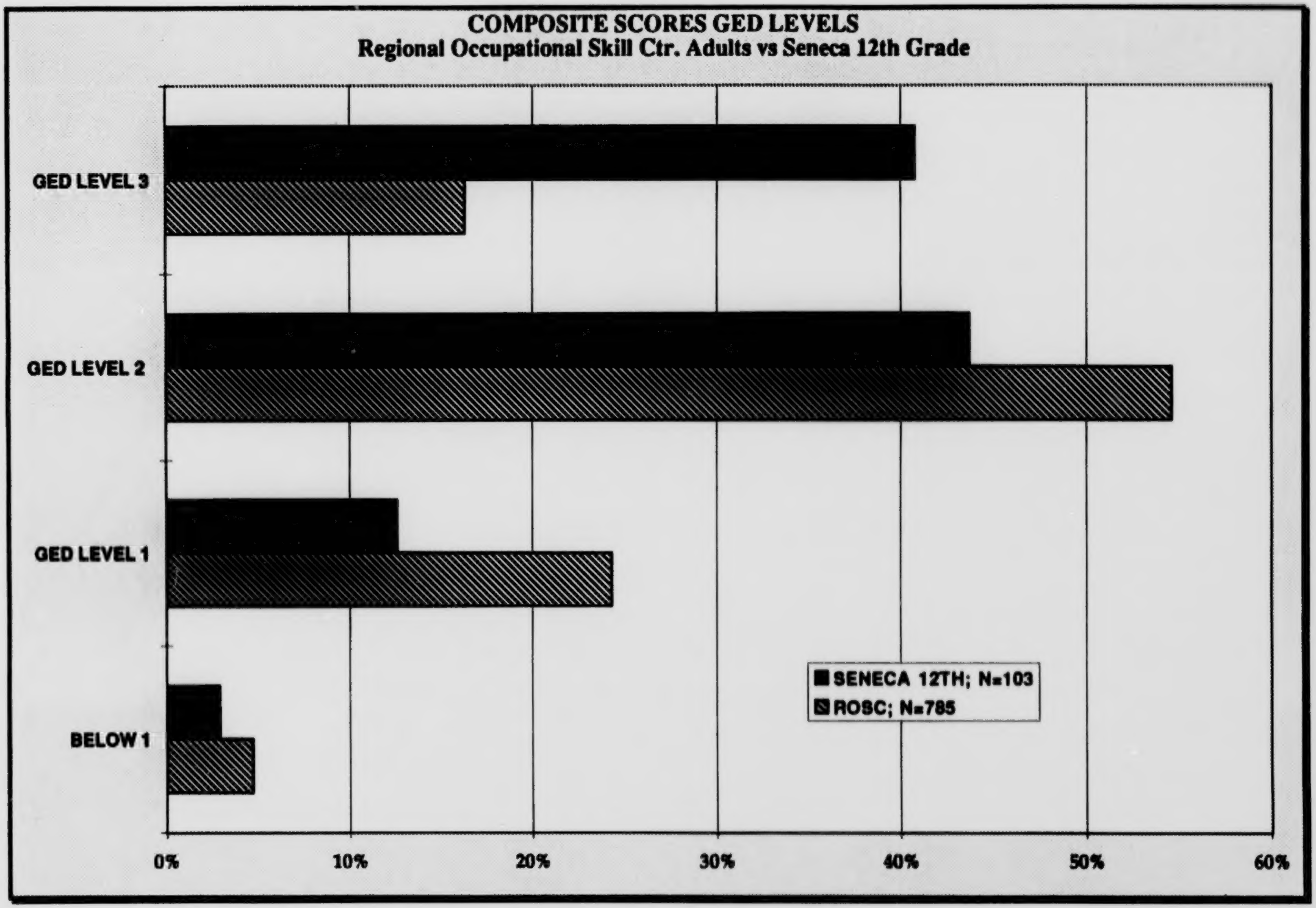
ROSC VS SENECA 12TH



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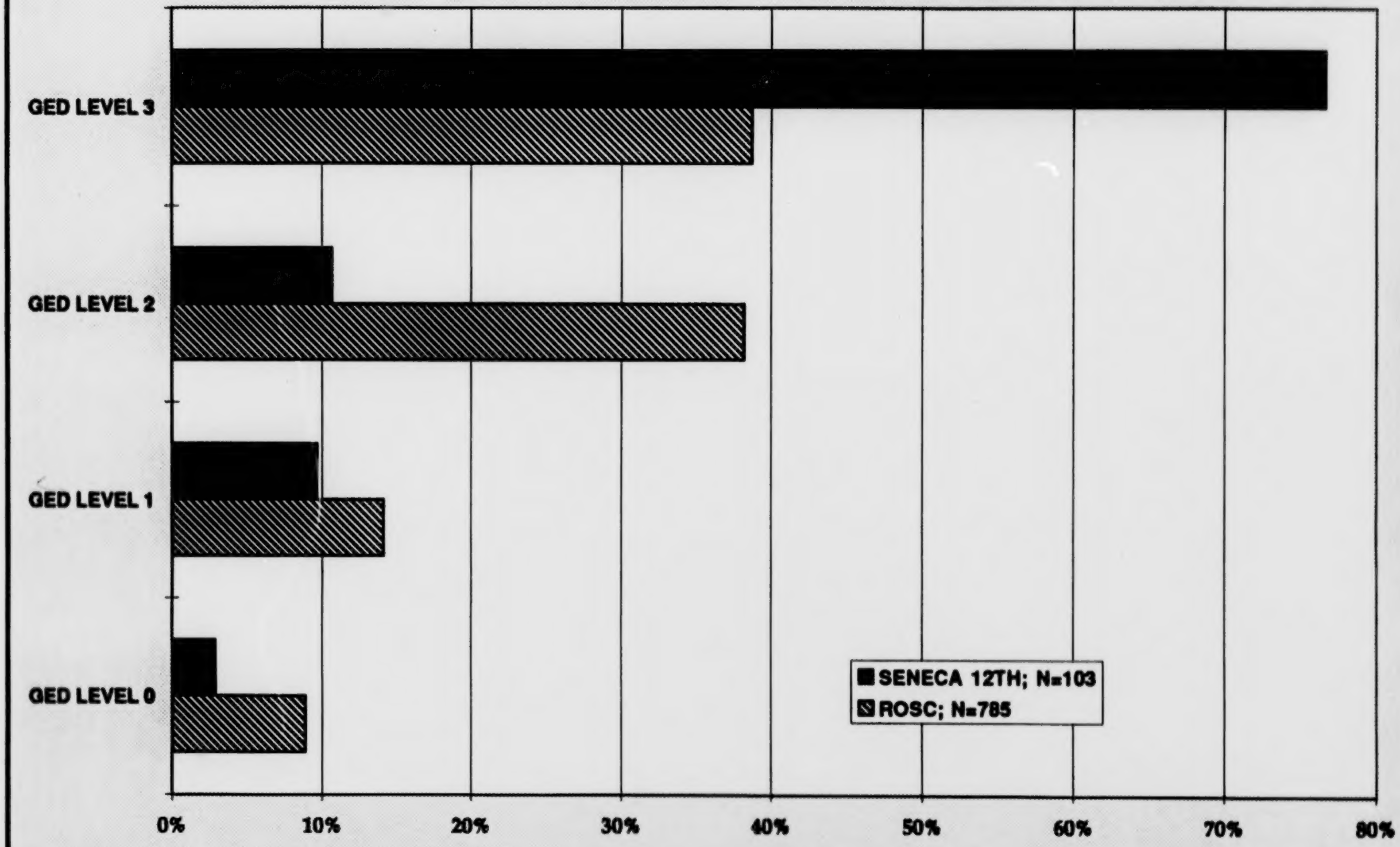
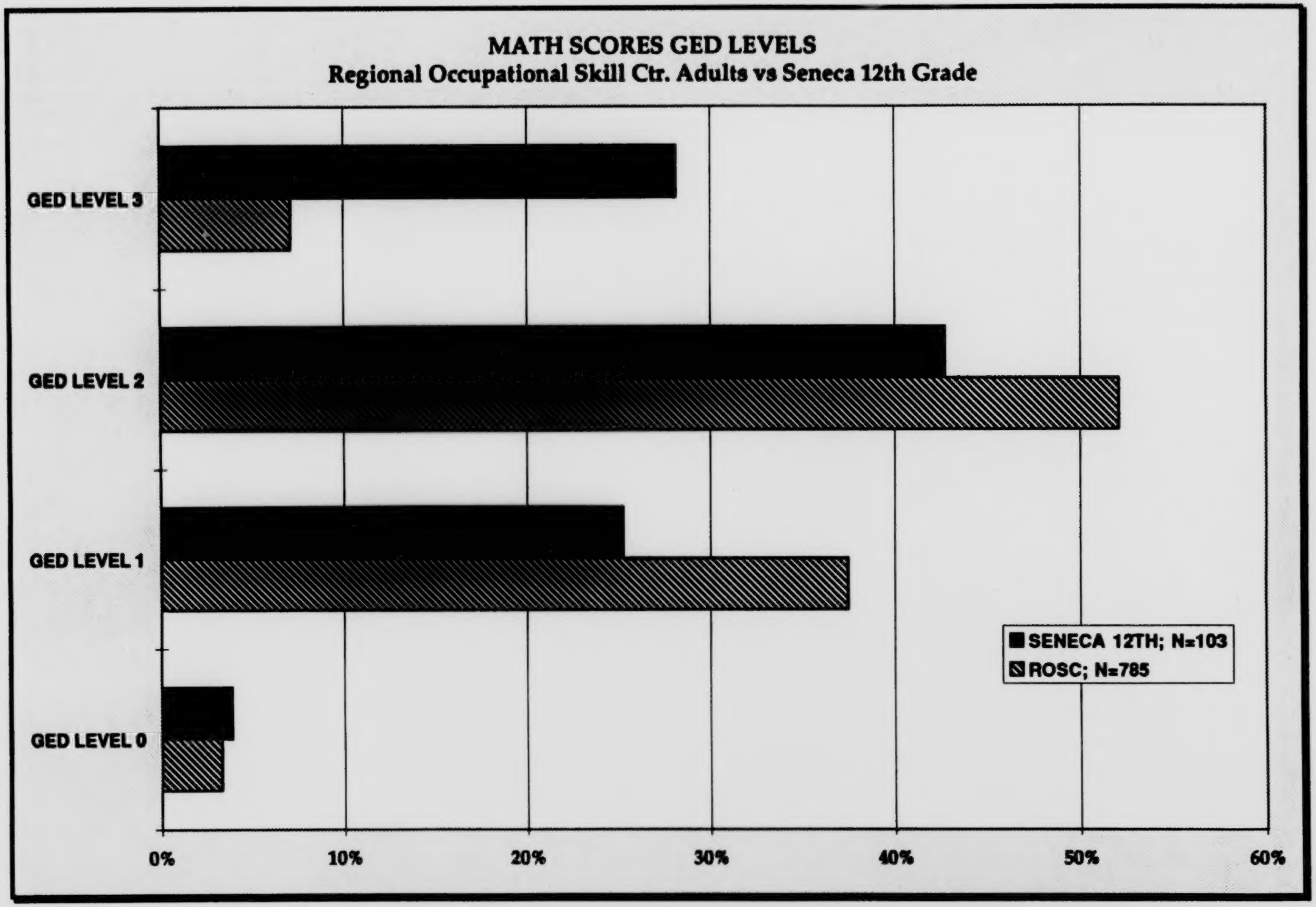
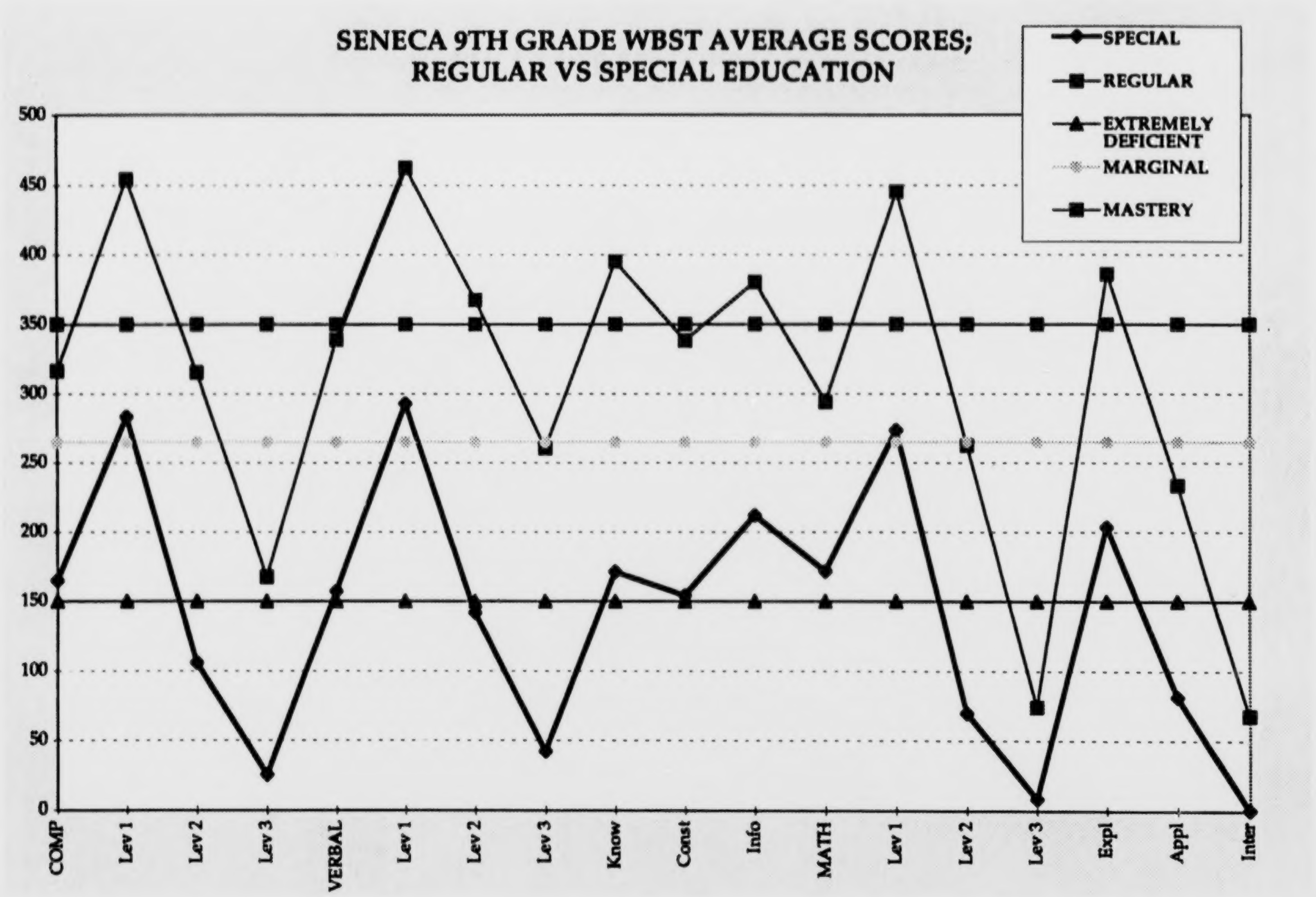
VERBAL SCORES GED LEVELS
Regional Occupational Skill Ctr. Adults vs Seneca 12th Grade



ROSC VS SENECA 12TH

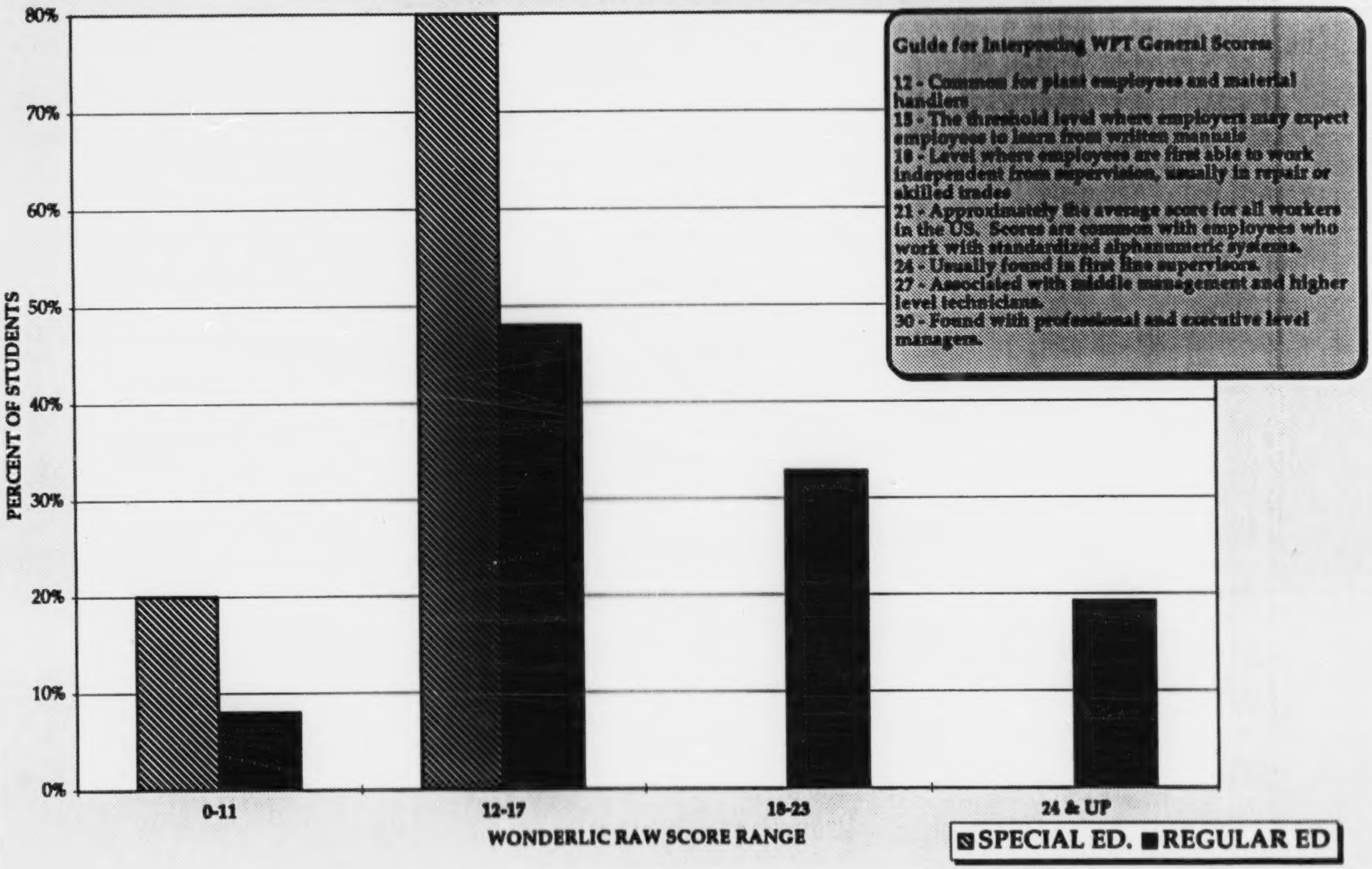


MATH SCORES GED LEVELS
Regional Occupational Skill Ctr. Adults vs Seneca 12th Grade



SENECA 9TH GRADE WBST AVERAGE SCORES; REGULAR VS SPECIAL EDUCATION

A COMPARISON OF WONDERLIC SCORES, SENECA 9TH GRADE, MAY 1996
SPECIAL VS REGULAR EDUCATION



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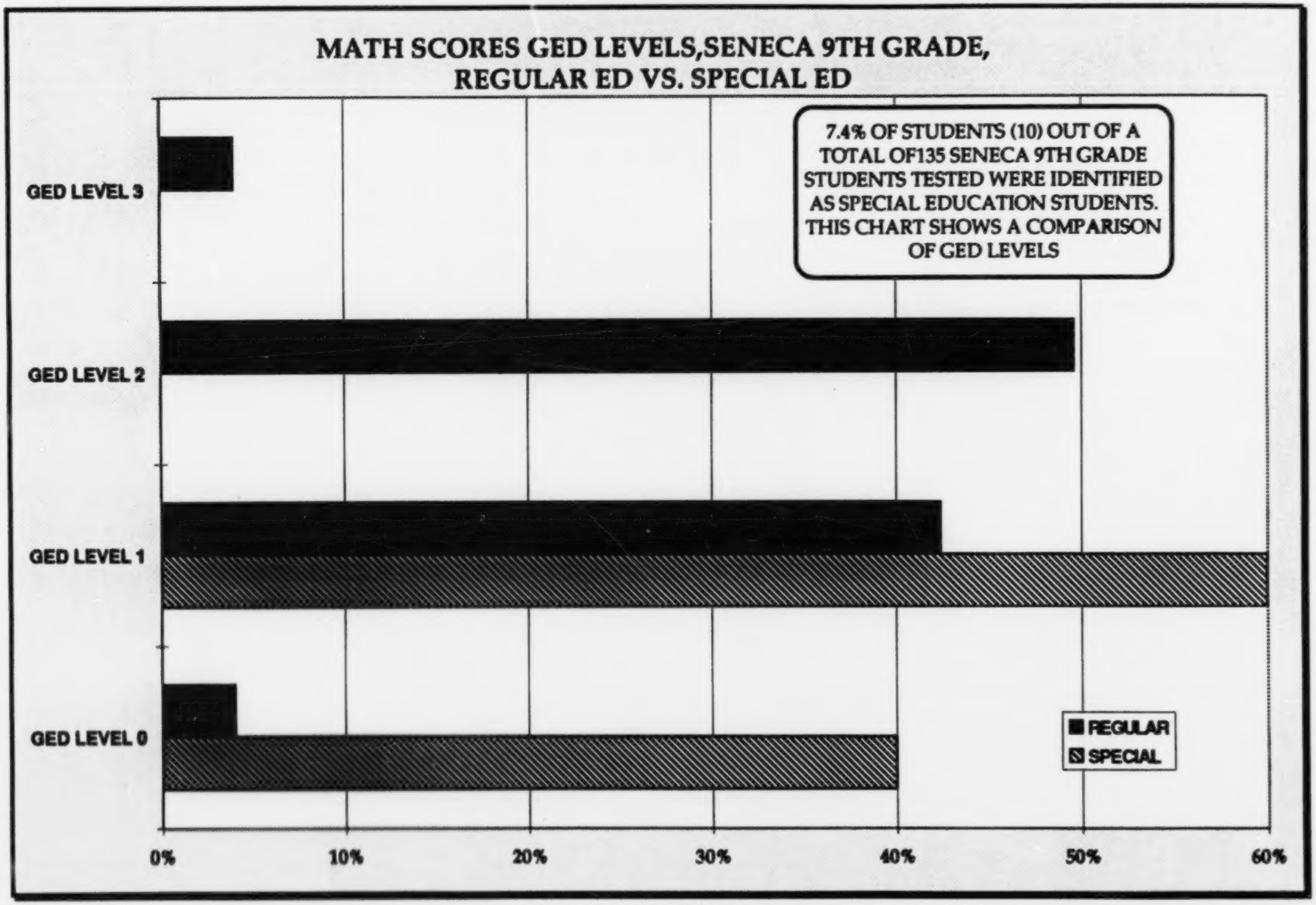
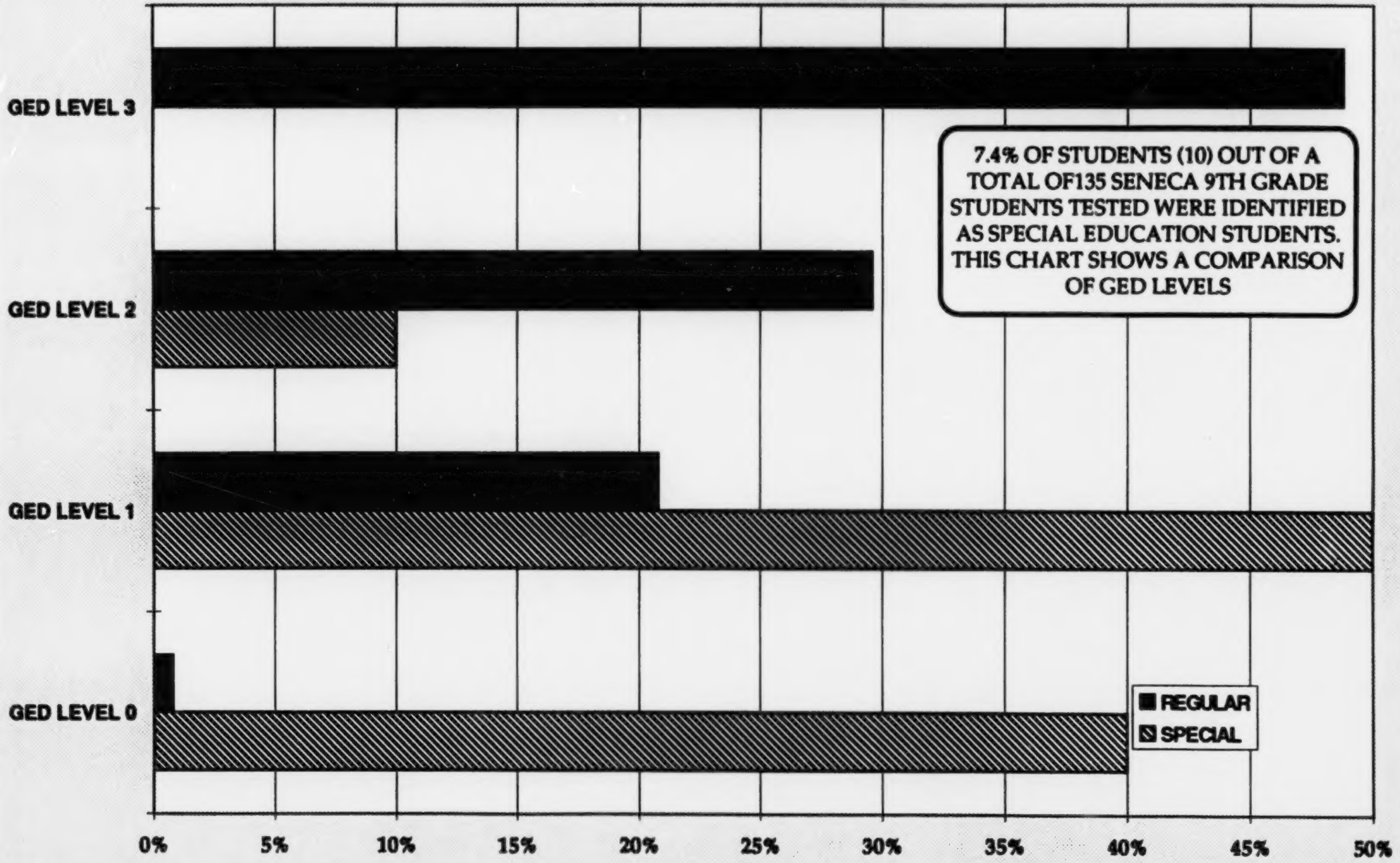


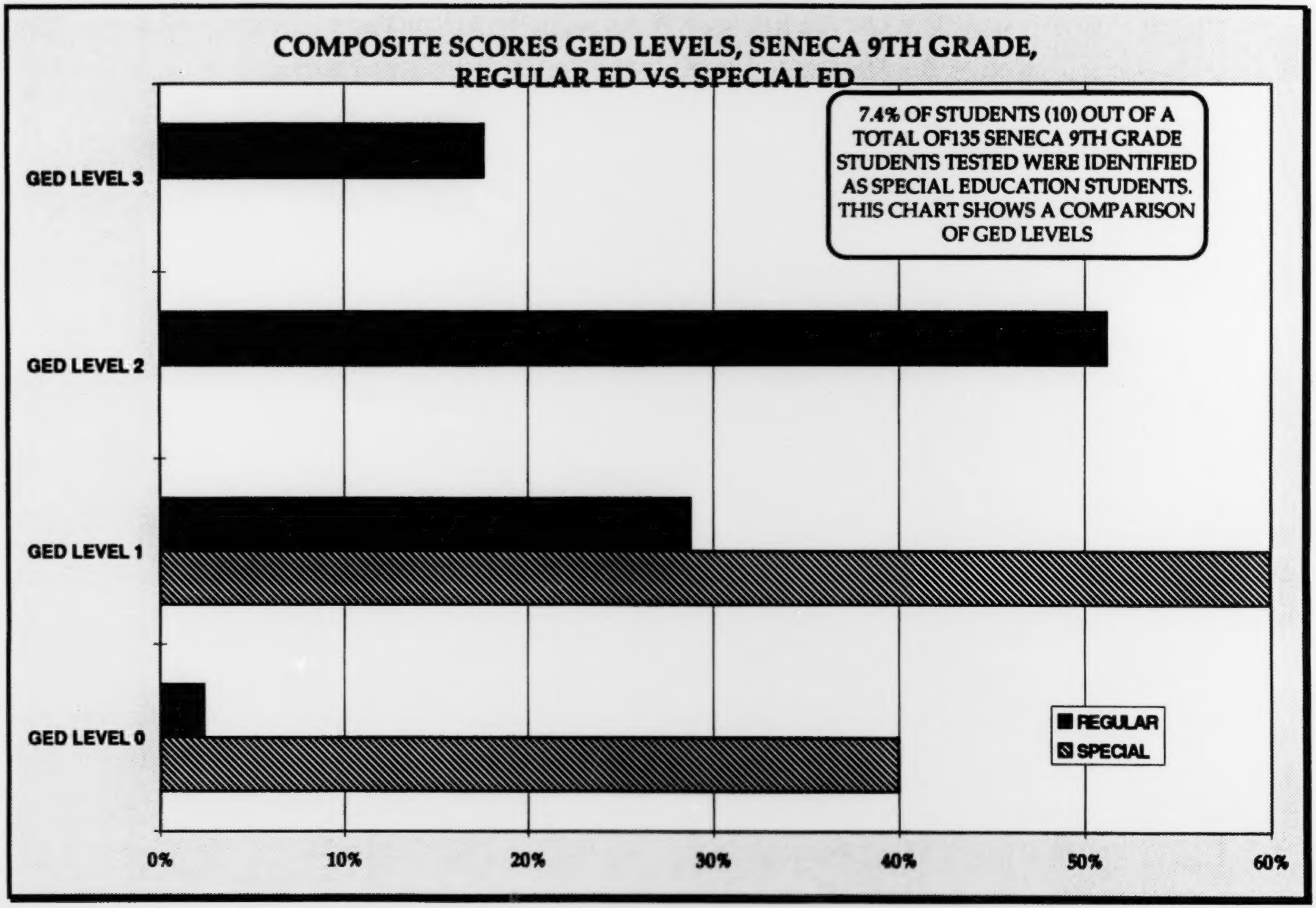
MATH SCORES GED LEVELS,SENECA 9TH GRADE, REGULAR ED VS. SPECIAL ED

7.4% OF STUDENTS (10) OUT OF A TOTAL OF135 SENECA 9TH GRADE STUDENTS TESTED WERE IDENTIFIED AS SPECIAL EDUCATION STUDENTS. THIS CHART SHOWS A COMPARISON OF GED LEVELS

VERBAL SCORES GED LEVELS, SENECA 9TH GRADE, REGULAR ED VS. SPECIAL ED



7.4% OF STUDENTS (10) OUT OF A TOTAL OF135 SENECA 9TH GRADE STUDENTS TESTED WERE IDENTIFIED AS SPECIAL EDUCATION STUDENTS. THIS CHART SHOWS A COMPARISON OF GED LEVELS


COMPOSITE SCORES GED LEVELS, SENECA 9TH GRADE,
REGULAR ED VS. SPECIAL ED
7.4% OF STUDENTS (10) OUT OF A TOTAL OF135 SENECA 9TH GRADE STUDENTS TESTED WERE IDENTIFIED AS SPECIAL EDUCATION STUDENTS. THIS CHART SHOWS A COMPARISON OF GED LEVELS
GED LEVEL 3
GED LEVEL 2
GED LEVEL 1
GED LEVEL 0
■ REGULAR
▨ SPECIAL
0%
10%
20%
30%
40%
50%
60%

WORK ETHIC CHECKLISTS

Northwest Tri-County IU#5
Adult Education Program
670 West 36th Street
Erie, PA 16508
PHONE: 814-866-3105
FAX: 814-866-5045

SITUATIONAL ASSESSMENT OF WORK HABITS

Student ______________________ Date ______________________
Rater ______________________ School ______________________

On the basis of your knowledge of the student, assess him/her on the following continuum:

X	X APPLIES	INCLINED TO X	INCLINED TO Y	Y APPLIES	Y
1. INITIATIVE **Student usually follows through on instructions.**	◄			►	**Student fails to follow instructions**
2. QUALITY OF WORK **Student's work is done correctly and carefully**	◄			►	**Student's work is not done correctly and carefully**
3. QUANTITY OF WORK **Student's productivity is consistently high**	◄			►	**Student's productivity is consistently low**
4. Student rarely wastes time.	◄			►	**Student often wastes time.**
HUMAN RELATIONS **Student relates will to his/her peers.**	◄			►	**Student does not relate well to his/ehr peers.**
6. Student works well on joint tasks.	◄			►	**Student does not work well on joint tasks.**
7. ACCEPTANCE OF AUTHORITY **Student accepts unpleasant tasks when assigned**	◄			►	**Student complains about unpleasant tasks when assigned**
8. ATTITUDE **Student is neat, alert and involved.**	◄			►	**Student is sloppy, sluggish and uninvolved.**
9. ABILITY TO FOLLOW INSTRUCTIONS **Student can understand most verbal directions**	◄			►	**Student cannot understand verbal directions.**
10. Student can understand most written directions.	◄			►	**Student cannot understand written directions.**
11. PERSISTANCE **Student stays on difficult tasks**	◄			►	**Student does not stay on difficult tasks**
12. TEACHER'S OVERALL REACTION TO STUDENT **Student should succeed in vocational program of his/her interest.**	◄			►	**Student will have difficulty succeeding in vocational program without assistance.**

PLEASE RECOMMEND ANY SUPPORT SERVICE THAT WOULD BENEFIT THIS STUDENT IN REALIZING SUCCESS IN FUTURE VOCATIONAL PROGRAMS.

___ **Remedial Math**
___ **Remedial Reading**
___ **Curriculum Modification**
___ **Job seeking skills (forms)**
___ **Equipment Modification**
___ **Job seeking skills (attitude)**
___ **Counseling by school counselor**
___ **Other**

NORTHWEST TRI-COUNTY INTERMEDIATE UNIT
ADULT EDUCATION PROGRAM
670 WEST 36TH STREET, ERIE, PA 16508
Phone: 814-866-3105 / EXT. 221

EMPLOYABILITY SKILLS/WORK RELATED SKILLS CHECKLIST

Student's Name ______________________________ **Date** ______________

1. QUALITY OF WORK

Over 50% of work is acceptable ( )
25-50% of work is acceptable ( )
Less than 25% of work is acceptable ( )
Work usually meets minimum standards ( )
Work is of good quality ( )

2. QUANTITY OF WORK

Wastes time ( )
Production below staff expectations ( )
Meets minimum standards ( )
Produces more than required ( )
Very high output ( )

3. INITIATIVE

Needs constant reminding ( )
Works on his/her own but needs frequent checks ( )
Needs average supervision ( )
Applies self to task ( )
Looks for things to do ( )

4. PERSISTENCE

Works with difficulty ( )
Stays on tasks by easily distracted and loses interest ( )
Needs average supervision ( )
Diligent to most tasks ( )
Persistent regardless of circumstances ( )

5. ATTITUDE

Antagonistic to tasks ( )
Avoids tasks ( )
Performs tasks without enthusiasm ( )
Shows enthusiasm for some tasks ( )
Usually enthusiastic for tasks ( )

6. APPEARANCE: DRESS AND GROOMING

Not suitable to tasks ( )
Seldom suitable ( )
Moderately suitable ( )
Usually suitable to task ( )
Always suitable ( )

7. ATTENDANCE

Absent 5-6 days per month ( )
Absent 3-4 days per month ( )
Absent 1 day per month ( )
Absent 1 day each 60-90 days ( )
Absent 2-4 days per year ( )

8. ACCEPTANCE OF AUTHORITY

Antagonistic ( )
Violates rules occasionally ( )
Accepts by needs occasional reminder ( )
Knows and follows without reminder ( )
Follows rules consistently ( )

9. HUMAN RELATIONS WITH PEERS

Unable to work with peers ( )
Able to work with only 1-2 peers ( )
Usually no conflict with peers ( )
Effective worker in small group ( )
Works well in all peer groups ( )

10. COMPREHENDING TASKS

Does not understand directions ( )
Slowly catches on ( )
Usually understands ( )
Needs only brief explanations ( )
Grasps ideas quickly ( )

11. ABILITY TO REMEMBER INSTRUCTIONS

Almost never remembers ( )
Occasionally remembers simple instructions ( )
Usually remembers 1-2 steps ( )
Remembers 3 or more steps 75% of the time ( )
Remembers most instructions most of the time ( )

12. TEACHER OVERALL REACTION TO STUDENT

Not employable ( )
Employable in highly supervised work ( )
Employable in some entry level jobs ( )
Employable at most nontechnical entry level jobs ( )
Recommend without reservation ( )

PRESENTATION NOTES TO PRIVATE INDUSTRY COUNCIL CONFERENCE

School To Work Transition

Tri-County Plan
Erie-Crawford-Warren Counties

Five "Local Partnerships"

- Warren County
- Crawford County
- Erie County AVTS School Districts
- Erie City School District
- Corry Area AVTS School Districts

Multiple Year Funding

- 95-97 Half year
- 96-97 Full Year
- 98-98 Full Year
- 98-99 Full Year

Status as of 1/10/96

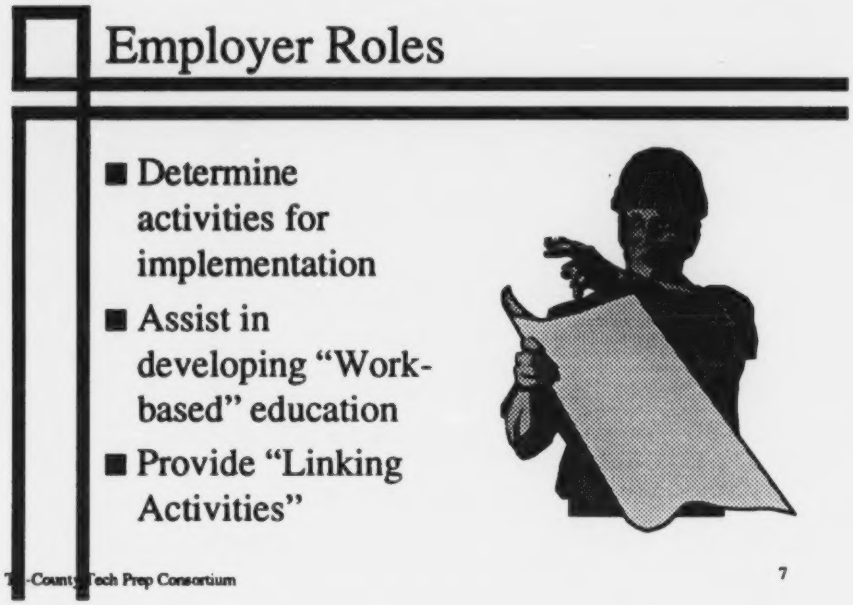
- 5 Local Partnerships are being developed
- 5 Proposals will be submitted by 1/31
- Input into activities are being solicited
- Emphasis will be on submitting plans that will allow detailed planning during the period Feb. through June
- Assuring honest, viable private sector is a priority

Mandatory Partners

- Employers
- Dept. of Education Agencies
- Dept. of Labor and Industry Agencies
- Dept. of Commerce Agencies

Major Components

- School Based Activities
  - Curriculum Reform
  - Guidance
- Work Based Activities
  - Apprenticeship
  - Mentoring
- Linking Activities



Employer Roles

- Determine activities for implementation
- Assist in developing "Work-based" education
- Provide "Linking Activities"

A Career Pathway is the place where many elements of S-T-W come together.

Some of the elements are..

- 4 + 2 Planning
- Clusters
- CIP Code for jobs
- Applied Academics
- Technology Education
- AVTS Enrollment
- Advanced Academics
- Post-Secondary Study
- Articulation
- Work-based experiences
- Linkages with employers

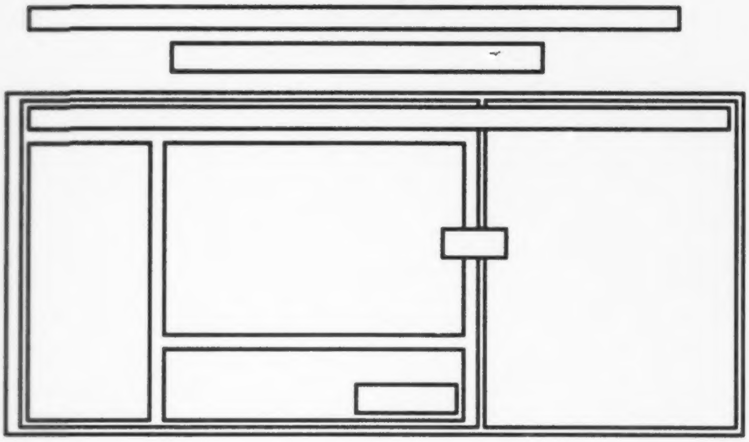
Students should know where they are going.

- A pathway is a map, a guide for counselors and parents

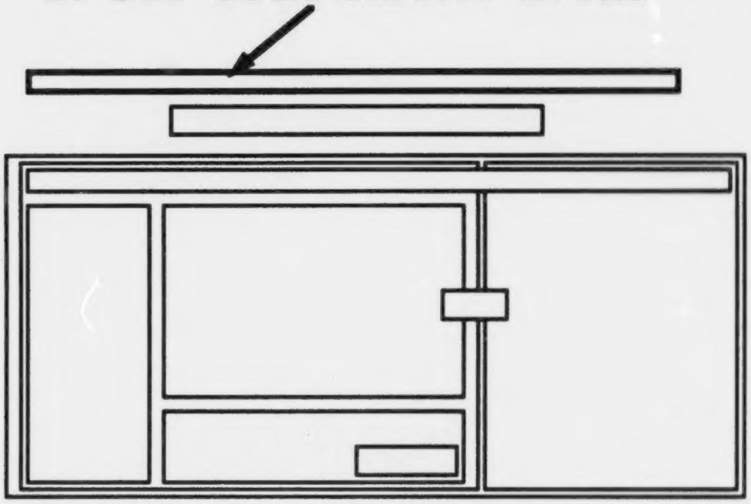
Students should have a plan for success.

- **It prepares a student for successful completion of post-secondary study or for employment.**

A pathway has many inter-related parts.



1. CIP code cluster areas

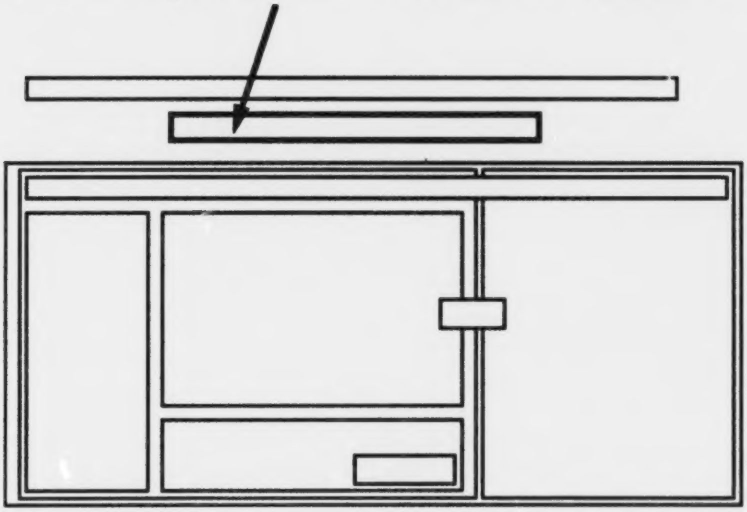


- The cluster area illustrates for students and parents the fact that all occupations can be combined or "clustered" under various classification systems.
- The number of "clusters" can vary but the idea is essentially the same, many jobs share common characteristics.

Identifying a cluster is a beginning point.

- Clusters link with many interest assessment tools
- Clusters link with many career exploration systems

2. Occupations within a cluster



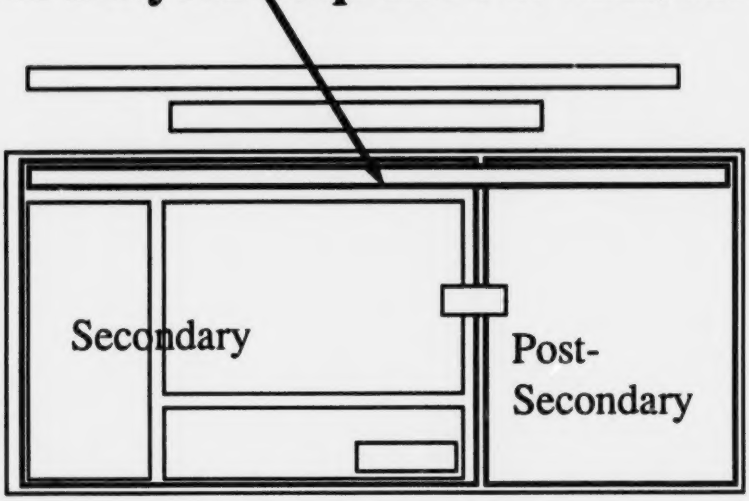
Occupations within a cluster.

This area of the pathway indicates for students and parents the types of jobs which are contained within any cluster area. The purpose is to illustrate the types of employment which might evolve from studies within a given cluster area.

Today's students will hold many jobs during their lifetime.

- A secondary goal is to introduce the idea of multiple employments across a working lifetime

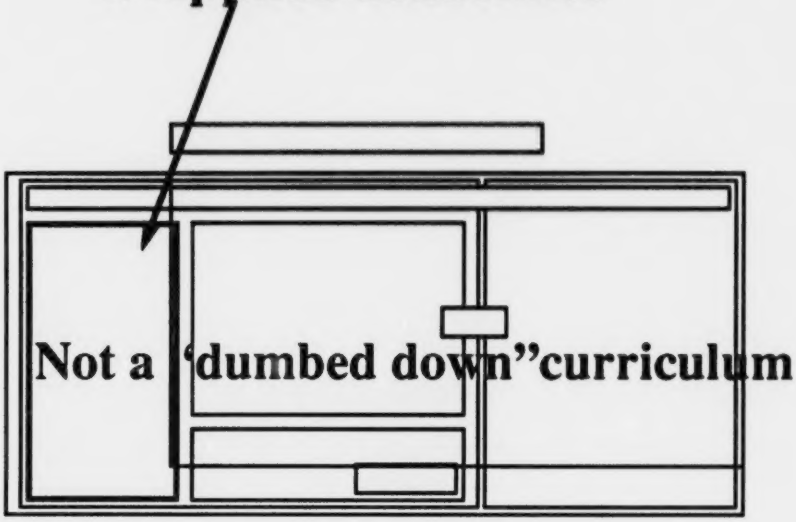
3. A six year sequence of classes.



A six year career development plan

- The pathway represents a 6 year plan, covering grades 9 through post-secondary 2. It suggests a long term committment and a relationship between secondary and post secondary studies.

4. Applied academics

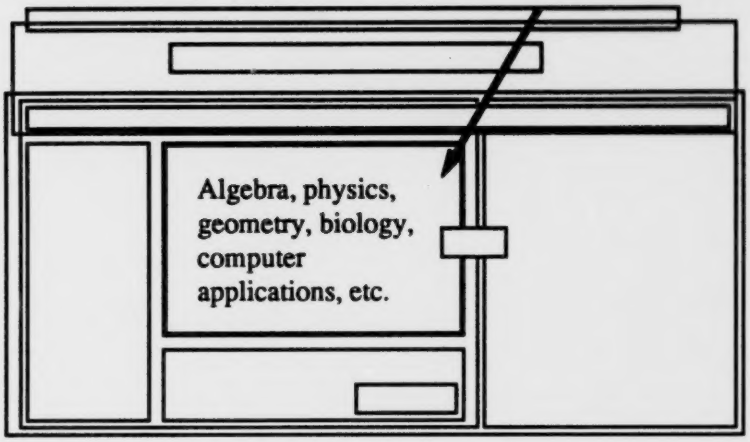


Not a "dumbed down"curriculum

CORD and AIT applied academics are scheduled in grades 9 and 10 to provide academic rigor in a "hands on" environment.

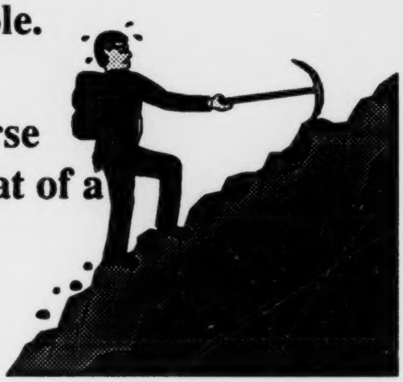
- Applied Mathematics
- Principles of Technology
- Applied Biology/Chemistry
- Applied Communications

5. Rigorous academic studies built upon the AA foundation.

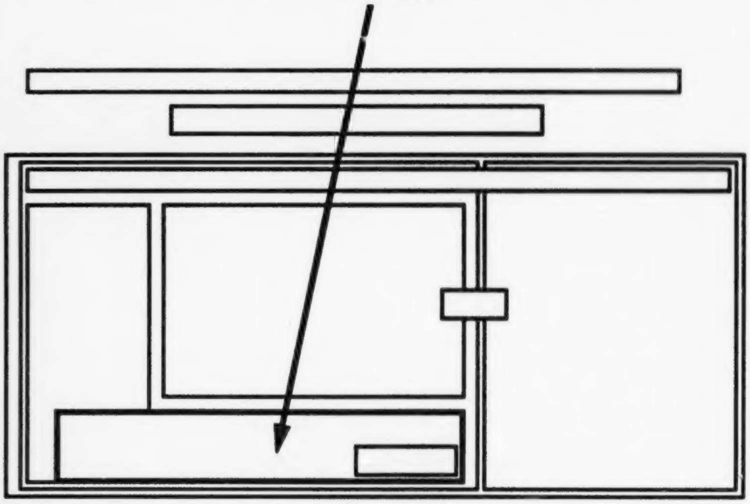


Algebra, physics, geometry, biology, computer applications, etc.

- Students are encouraged to take as much math and science as possible.
- The academic sequence of course will resemble that of a "college track" student.



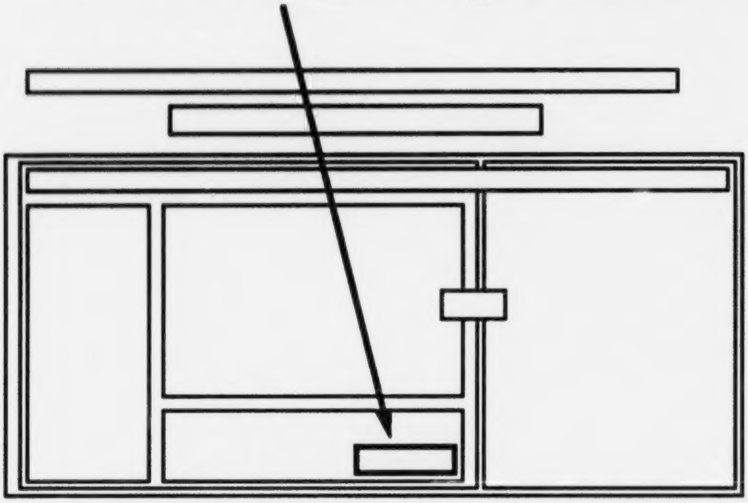
6. A technology strand



All students are provided with technology instruction

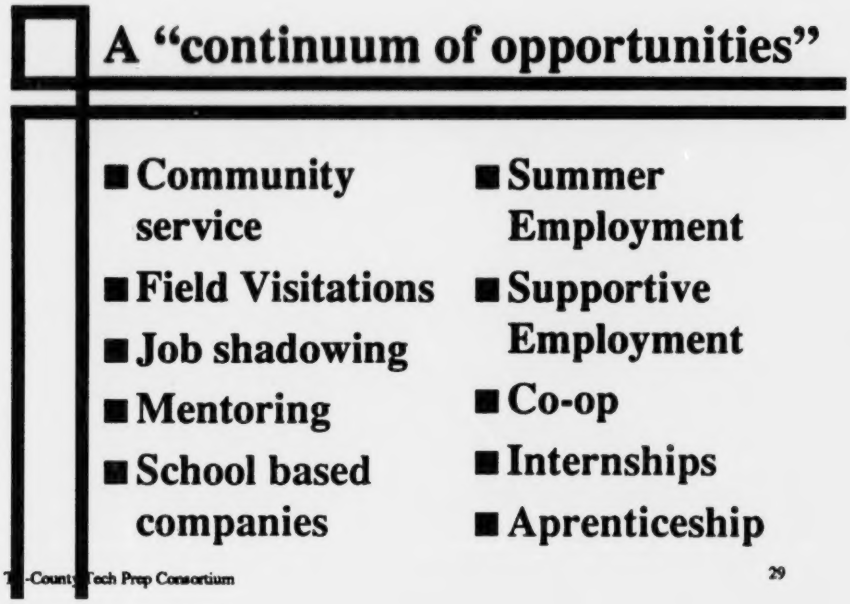
- At an AVTS, or
- Through participation in a comprehensive “Technology Education” program in the home high school
- In either case experiences are related to employment skills

7. Work-site experiences



A redefinition of “school”

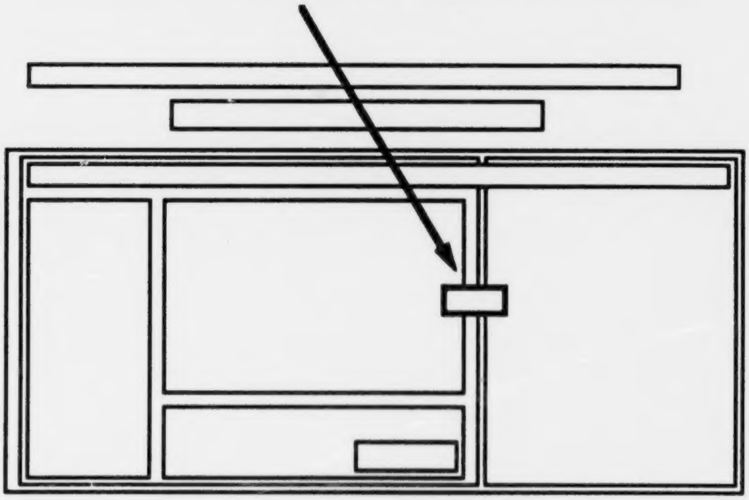
- Private sector input into curriculum
- Linkage between teachers and employers
- Every student spends some time at a “work based” training site
- Content resembles what is done on the job
- Assessment based on performance

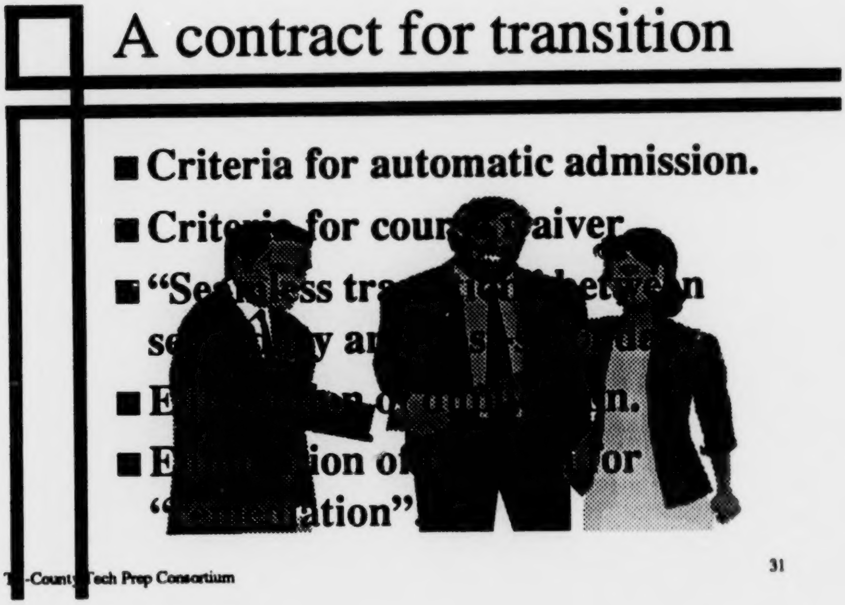


A "continuum of opportunities"

- Community service
- Field Visitations
- Job shadowing
- Mentoring
- School based companies
- Summer Employment
- Supportive Employment
- Co-op
- Internships
- Aprenticeship

8. Articulation agreements





A contract for transition

- Criteria for automatic admission.
- Crite[illegible] for cour[illegible]aiver
- “Se[illegible]ess tra[illegible] bet[illegible]n se[illegible]y a[illegible]
- E[illegible]on o[illegible]n.
- E[illegible]ion o[illegible]or “[illegible]ation”.

T[illegible]-County Tech Prep Consortium

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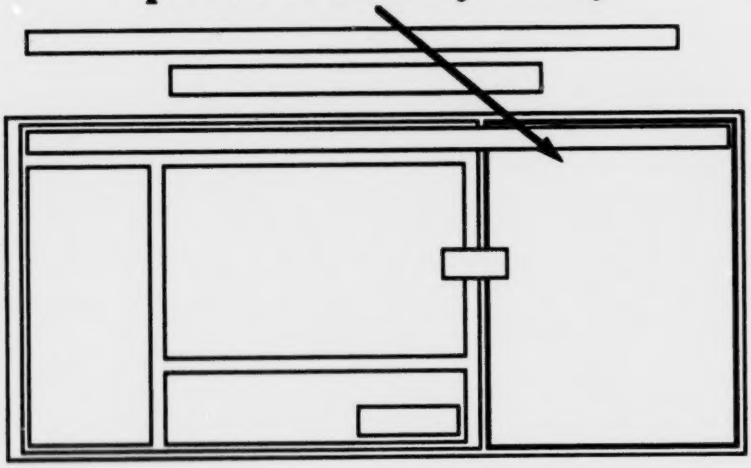
9. Associate Degree post-secondary study



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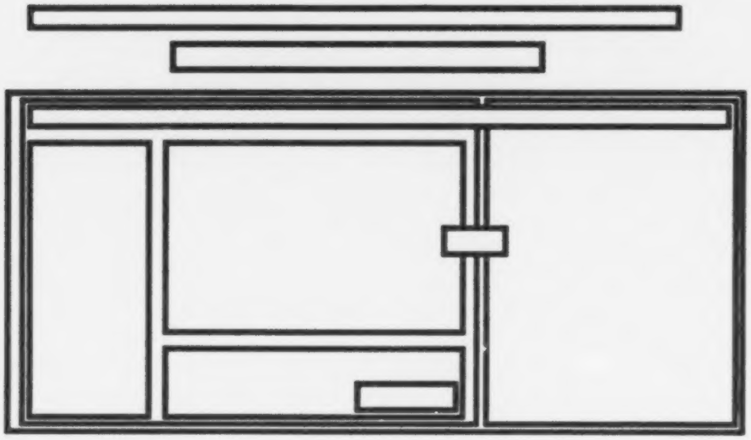
Why Associate Degree study?

- Jobs in the future will require technical training.
- More students pursue 4 yr. college programs than the economy can absorb.
- Associate degree study leads to employment which leads to additional training.

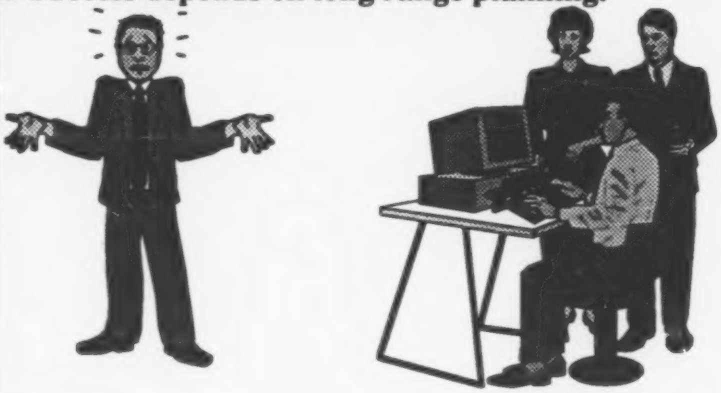
10: Teamwork: secondary / post-secondary / and the private sector

Pathways: The foundation of Tech Prep program approval.



Pathways can make a difference

- Success depends on long range planning.



TRI-COUNTY SCHOOL TO WORK TRANSITION PLAN

Northwest Tri-County School to Work Transition Plan

Richard C. Gacka Ed.D.
Director: Tri-County Tech Prep and Tri-County Work Based Training Projects
Northwest Tri-County Intermediate Unit #5
252 Waterford St. Edinboro, PA 16412
814-734-5610/ extension 231

Introduction

The School To Work Transition Initiative represents an educational umbrella under which a number of previously isolated school reform efforts[1] will now be integrated. Additional components will be added as legislative[2] and programmatic initiatives emerge. The Northwest Tri-County Intermediate Unit #5 has provided fiscal and programmatic management services for the Tri-County Tech Prep consortium since the 91-92 school year integrating multi-agency participation and regional planning.

The consortium referred to above is made up of representatives from seventeen local school districts and six post-secondary schools, six area vocational technical schools, employers, and parents.

The overall purpose of the Tech Prep Initiative was to increase the readiness of high school graduates to enter post-secondary technical training programs and eventually enter the workforce as a skilled applicant. The purpose of the School to Work Transition Initiative is to increase the readiness of all students for employability or advanced training. In effect, the target population has been expanded to include employment training for all students.

The overall School to Work Transition Initiative has many key elements and the purpose of this paper is to provide an overview or "big picture", that is, how all of the elements relate to and complement each other.

---

[1] *Strategic Planning, Goals 2000, Outcome Based Instruction, Graduation Projects, Certificates of Mastery, Career Pathways, Career Counseling, Youth Apprenticeship, etc.*

[2] *Enabling legislation is PL 108-239: School-to-Work Opportunities Act of 1994*

Element A : Tech Prep

Tech Prep has been a pivotal element in the achievement of broad based educational reform. It places emphasis on the need to modify secondary curriculum and guidance services, with an automatic progression into a two year post secondary technical training program. The Tech Prep element of the school to work initiative contains the following components:

Component A-1: Curriculum Reform Activities

A major focus of the Tech Prep activities is the encouragement of radical change in the way that the majority of students are taught and the nature of the materials included in the courses that they are provided. This effort emphasizes, and is targeted toward, the middle 50% of the student population, but the change which is proposed is assumed to have potential benefit for all students. One of the goals of Tech Prep is to replace the "general track" with a "Tech Prep Curriculum," one designed to equip students with the skills they will need to gain employment. Included within this component are two objectives:

a) increasing the overall rigor of academic expectations in our schools, and

b) making academic material easier to learn through an emphasis on relevant "hands on" instruction.

A1.1 Adoption of an Applied Academic Curricula

The term Applied Academics refers to a theory of instruction which emphasizes student involvement and "hands on" instruction. It is a reaction to the general criticism that too many students now sit passively in classes which emphasize a lecture format, presenting students with materials which they see as irrelevant to any of their needs. The term "Applied Academics" refers to a philosophy and method of instruction, although it is also used to the curriculum materials published by CORD[3] and AIT[4]. These are curricula that have been developed at the national level in Physics, Biology, Chemistry, Mathematics, and Communications. Underlying the use of "applied" methodology is the premise that many students who find traditional lecture based instruction difficult, will grasp material more easily if provided in the context of "relevant and participatory" instruction. Thus, students who might shy away from subjects perceived as too difficult, will now succeed in areas such as chemistry, physics, or biology. As the concept of applied academics broadens, increased movement toward the development of "hybrid" curricula, made up of a combination of commercially available applied materials and those developed at the school or teacher level, will emerge. However, the critical elements of all "Applied Academic" curriculum materials are their reliance on active participation by students, hands on involvement, and subject matter that is relevant to future employment. This movement toward manipulative and relevant instruction is really nothing new, but unfortunately, the accusation that existing practice is too "theory based" or academically sterile is true in some locations.

At the outset of the Tech Prep movement, Applied Academics were viewed as something to be started in Grade 11 as part of a "Tech Prep 2+2 Curriculum." It is now clear that implementation of Applied Academics must begin at the lowest grade level possible. As a result, the Tri-County School to Work Transition Initiative will emphasize:

Integration into the Elementary and Middle/Jr. High School Curricula - Just as there is excess reliance on lecture at the secondary level, the same problem is evident at the elementary level. A need for increased emphasis on the relevance of academic instruction at the elementary level is clear. If secondary level instruction is to emphasize "applied" methodologies, then it is only logical that those same approaches should begin as early as possible in a student's academic career. It is also logical to assume that if students have been exposed to applied instruction during their formative years, then it should be much easier for them to successfully deal with it as it is encountered in secondary school subject areas. The Tri-County SWTI project promotes the implementation of applied curriculum at the elementary level through the following activities:

---

[3] *Center for Occupational Research and Development, 601C lake Air Dr. Waco, Texas 76701*

[4] *Agency for Instructional Technology, Box A, Bloomington, Indiana 47402-0120*

- Curriculum support for elementary teachers willing to attempt implementation of applied methods within their classrooms.
- Identification of model elementary level curriculum materials which emphasize an applied approach to instruction, and distribution of this information to all elementary staff in the region.
- Identification and support for a core group of elementary instructors (math, communications, and science) who are considered to be "model teachers" and utilization of this group in the training of other regional instructors through a variety of staff development activities.
- Provision of incentives to instructors who experiment with, or adopt, applied instructional approaches.

Adoption of Applied Academics in the Senior High Schools - Various models for Tech Prep grade configuration have been promoted as a way to facilitate applied academics, and it appears that more will evolve. Originally, Tech Prep was seen as a 2+2 model consisting of grades 11, 12, Post Secondary 1, and Post Secondary 2. This was shortsighted and ignored grades 9 and 10 where foundation skills in the sciences, math, and communication are developed. It is not uncommon to now hear of 4+2 and even 6+2 models, suggestive that the field is recognizing that the focus on the academic core subjects stressed in Tech Prep needs to be started early in the student's career. While the specific configuration will vary with the organizational pattern of any school district, the emphasis needs to be on a planned sequential course of studies, general at the elementary level, refined at the middle school level, and integrated across disciplines at the secondary level. The IU school to work opportunities project will participate in the following activities:

- Encourage the development of a series of curriculum models consistent with the different organizational patterns which are operational within the region. All methods will emphasize implementation of applied methods of classroom instruction, and integration within subject areas.
- Assist in the development of comprehensive course sequences which will help students and their parents see the need for careful planning in course selection.
- Establish curriculum resource centers that teachers can use to evaluate various curriculum models and materials.
- Act as consultants to district secondary curriculum coordinators and administrators in exploring and implementing applied academic instruction.
- Maintain a curriculum "lending resource center" containing Applied Academic materials for review and classroom trial by district staff.
- Support field visitations for administrative and instructional staff so that they can directly observe sites where applied academics are practiced.
- Provide extensive staff development services to district personnel.
- Develop and support the operations of Centers for Excellence in Applied Academics Instruction where teachers can be trained, and procedures for accreditation of teaching excellence can be established.

In pursuing these objectives, the STWOA project will promote the use of high quality commercial "Applied" curriculum materials published by the Center for Occupational Research and Development (CORD) and the Agency for Instructional Technology (AIT) including formal curricula in the following areas: Principles of Technology (2 year physics course), Applied Mathematics I & II, Applied Communication, Applied Biology/Chemistry, and Workplace Civics and Government. These programs represent a comprehensive field tested approach to "hands on instruction" while retaining subject matter integrity. Initial efforts to identify or develop a curriculum in Applied Economics are underway.

All seventeen school districts in the tri-county region have been exposed to the Applied Academic materials and a matrix showing the level of acceptance of each of the districts is maintained[5]. Districts are now at various stages of study and course adoption ranging from study by curriculum committees to formal adoption by school boards. As teachers become familiar with the CORD and AIT Applied Academics materials, and as educators as a whole become more receptive to the idea of "hands on" instruction, we expect to see curriculum expansion in several dimensions. The Tri-County project will be involved in the following activities:

- Expansion of the number of subject areas where "applied" methods are emphasized (Civics, Economics).
- Expansion of the number of resource library materials solicited from curriculum vendors.
- Continued workshops and seminars dealing with the use of CORD and AIT materials.
- Arrangement of field visits to sites where the CORD and AIT materials are in full utilization.
- Assistance in acquiring CORD materials through joint purchasing agreements and/or utilization of existing lab materials.
- Continued availability of full sets of CORD and AIT materials for review and field testing by district staff.
- Continued reproduction and printing services under site license agreements.
- Expansion of the video tape library related to applied academics adoption and usage.
- Development of workshops presented by vendors of AA materials.
- Develop and support the operations of Centers for Excellence in Applied Academics Instruction where teachers can be trained, and procedures for accreditation of teaching excellence can be established.

A1.2 The Southern Regional Educational Board (SREB)

While not a curriculum in the same sense as the CORD materials, the Southern Regional Educational Board (SREB)[6] oversees a series of model sites emphasizing a structured educational process using applied methodology within which assessment of student skill acquisition is an integral part. At present, the Corry Area School District has been accepted as a SREB model site. Activities to be provided within the Tri-County project will include:

- Assisting other school districts in affiliating with SREB and applying for "model" status as part of the High Schools that Work project.
- Scheduled visits Corry High School, learning about their SREB model for academic and vocational integration.

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[5] *See Appendix A, Item 1*

[6] *Southern Regional Education Board, 592 Tenth Street, N.W., Atlanta GA 30318-5790*

A1.3 Post Secondary Articulation and Curriculum Linkage

The Tech Prep element also involves refinement of instructional methods and procedures at the post secondary level. The objective is to provide a seamless transition between high school and one year certificate or two year associate degree programs. The colleges and universities participating in the project have agreed to undergo curriculum study, and communicate with secondary school programs in order to define the sequence of courses necessary to be guaranteed admission to post secondary studies. Other purposes include the elimination of course redundancy, allowing students to obtain advanced credit if appropriate, and continued emphasis on relevant instruction. In effect, a unified curriculum is established with both the secondary and post-secondary instructors aware of the skill levels and types of instruction provided by the other. The Tri-County consortium will continue to provide:

- Development of formal "Articulation Agreements" between secondary and post-secondary institutions, both in terms of number of agencies participating and the areas in which agreements are in effect. Specific activities will include the arrangement of meetings between staff, development of methods to facilitate text development, negotiation between programs, research and technical assistance, and clerical assistance in developing the final agreements.
- Validation of both secondary and post-secondary curriculum content by personnel from the private sector.
- Direction and mediation of the communication between secondary and post-secondary instructional personnel.
- Assistance in the development of new degree and certificate programs reflecting the needs of local employers. Efforts will emphasize preparation starting at the high school level and ending with a post secondary technical degree.

A1.4 Teacher Training in the Area of Applied Academics

An important area which receives little attention in the discussion of school reform is the training of prospective teachers in the philosophy and methodologies of Applied Academics. Involvement of teacher training programs in the consortium increases the likelihood that personnel entering the profession will be receptive to the idea of utilizing Applied Academics in their instruction and will enter the job market ready and able to integrate relevant instruction within their classrooms.

The Education Departments at Edinboro University, Mercyhurst College, and Gannon University have been contacted relative to the inclusion of training in Applied Academics within their teacher training curriculum. The Tri-County Tech Prep project will continue to advance the idea that all prospective teachers should have formal course instruction in components of the School to Work initiative and will work with local teacher preparation institutions to incorporate the method changes into their curriculum.

A1.5 Integration Between Tech Prep and Academic Programs

As noted earlier, the Tech Prep element is designed primarily for those students who are not contemplating enrollment in a four year baccalaureate degree program. It is expected, however, that mobility will exist between these populations and that the following services will be offered:

- Advise students who are planning to go to a four-year baccalaureate degree program that they can enroll in Tech Prep classes in order to obtain a solid technology-based education in core academic areas.
- Develop inter-agency agreements which will allow students who complete a Tech Prep curriculum to go on for a four degree after the completion of their two year associate degree.
- Assist teachers within the academic track to adopt some of the instructional techniques included in the Applied Academic curriculum.

The Tri-County project emphasize the concept that students will not have to choose between technology and academic instruction, but rather that academic students may take Tech Prep courses and Tech Prep students may advance to more theoretical "academic" courses. As a result, some Tech Prep will go on to four year training and some college bound students who have taken technology coursework will enroll in two year associate degree programs. All recruitment materials will emphasize the flexibility that a sound academic foundation provides. A key element is the availability of planed course sequences which allow flexibility if a solid foundation in the prerequisite math, science, and communications skills is established during the formative years.

A1.6 Integration Between Academic Areas

Another key component of the Applied Academics movement is the integration between various curriculum areas, i.e. involving reading, math, and writing activities within a science project. In effect, the broad areas of communications, mathematics, and the sciences are seen as interrelated components of the student's overall learning. As curriculum efforts mature beyond the adoption of commercial materials, the emphasis shift toward achieving full integration of subject matter and reduction of the artificial separation that now exists between courses. The emergence of "project-centered" applications will be stressed and integrated with a variety of "out of school learning options." This might also involve revisions in course or staff scheduling. Included in this area will be the following activities:

- Consultation in revising class scheduling, i.e. extended class periods and alternate day attendance patterns which provide more time for project centered instruction.
- Encouragement of field based studies as a component of a student's overall secondary or post-secondary programs.
- Development of staff workshops and seminars dealing with the integration of multiple subjects under the umbrella of project-centered instruction.
- Acquisition of curriculum materials from a variety of sources which emphasize interdisciplinary integration of subject matter.
- Encouragement of integration between home school academic teachers, instructional staff at the AVTS, and post-secondary teaching staff.
- Encouragement of regional competitions which stress the integration of academic skills within a problem solving environment.

A1.7 Increased Overall Academic Rigor

The content of the Applied Academic curriculum is as challenging as that commonly found in college prep science and mathematics courses. Thus, a key element in the Tech Prep movement is the assurance that students will take as academically demanding coursework in mathematics, sciences, and communication as part of an approved Tech Prep program than they would normally take under the current structure. While the content of courses will be demanding, the "hands on" approach to instruction is expected to make the material more relevant and easier to understand for a majority of students who now have difficulty when course work is presented only in a lecture format.

An objective of the Tri-County Tech Prep project is to convince parents, guidance counselors, and students that rigorous coursework in math, communication skills, and the sciences is critical to future occupational success. Included in this component will be the following activities:

- Activities leading up to competency based instruction, assessment, and student reporting will be promoted. The SWTI project will assist schools in the identification of skill acquisition sequences, skill prerequisites for movement to subsequent levels, methods for monitoring, and devices for record keeping, and reporting skill competence.

- Movement toward region-wide skill assessment through the use of standardized skill documentation.
- Development of model systems and documents for planning and implementing individualized student plans.
- Development of informational materials for parents which will lead to their support in the pursuit of more demanding course scheduling.

A1.8 Implementation of Competency Based Instruction

Part of the criticism of the existing educational system is the opinion that many students graduate without having achieved specific skill competencies, especially competencies perceived by the private sector as being essential to employment. Outcome Based Education provides an objective means for planning, delivering, and assessing the degree of student mastery of predetermined skills. The School to Work Transition Initiative will link with the general school reform movement by emphasizing the importance of sequential skill based instruction and the objective monitoring of skill acquisition at regular stages within a training program. Documentation of skill competence, and student advancement based on their skill acquisition (not time spent), are critical elements of each district's school to work curriculum. It critical to the overall success of the school to work transition movement the implementation of a competency based model be applied to all students. Consistent with this effort, the Tri-County project will engage in the following activities:

- Assist districts in researching models for the objective monitoring and reporting of student skill acquisition.
- Assist in the development of various reporting procedures, including the use of computers, that lead to implementation of objective and skill oriented student portfolios.
- Assist in developing systems which integrate skill monitoring with student progress reporting, career plan development, and curriculum evaluation.
- Assisting in the utilization of skill based instruction with students who display special needs.
- Promote the implementation of employer driven objective third party testing, such as SOCAT, topical skills standards, or certificates of initial and advanced mastery.

A1.9 Elimination of the Traditional "General Track"

An essential premise of the Tech Prep component is that it will result in the elimination of what is now known as the "general track", described by some as a "go nowhere" curriculum that fails to prepare students for employment. In its most simplified form, the newly proposed structure would consist of "academic course sequences" leading to a 4 year degree and a "Tech Prep course sequences" which would lead to a two year associate degree, a one year certificate program, or employment. The Tech Prep pathways course sequences would be components of PA Dept. of Education approved Tech Prep programs.

Realistically, this “two tiered” model is overly simplistic and does not account for students who may not plan to go on to post-secondary instruction, may not possess the innate ability to complete the proposed rigorous applied academic curriculum inherent in Tech Prep, or who may, because of motivational, financial, or environmental factors choose not to utilize the educational services which are available to them. Thus, the I.U. consortium envisions the development of an overall school-to-work system with at least five "tracks":

- Academic (4 yr. post-secondary),
- Tech Prep (2 yr. technical post-secondary,
- AVTS Vocational (entry into the workforce upon graduation following vocational training) , one year certificates, specific occupational accreditation, formal apprenticeships, and
- Supportive Vocational (eventual assisted or supportive employment), and

- Those students who do not appropriately participate in any of the preceding programs (these students are not a formal planned group, but failure to address the likelihood of the existence of such a group would naively overestimate the success level of the intervention.) Recognition of the existence of this group would also facilitate integration of the wide range of currently fragmented "remedial" programs.

In terms of the lowest twenty-five percent of students, the group toward which Tech Prep is not targeted, the Tri-County project will assist districts in:

- Developing "at risk" curriculum models which addresses the various causes for a group of students not participating in the Tech Prep program.
- Working with each AVTS to promote alternative vocational preparation models (classroom, field based, and employment directed), targeted toward immediate employment.
- Development of effective working relationships with secondary and post-secondary Special Education providers. Through the use of Special Education and Perkins moneys, the project will integrate with the ongoing "inclusion" efforts of the special educational system. This will result in the fourth curriculum options which emphasizes less technical and low skilled but supported employment, while emphasize technological instruction to the extent appropriate for the student's abilities.
- Provide curriculum planners with information about the best points found in the applied academics curriculum when developing the curriculum for students who may not have the potential for formal post-secondary studies.
- Work with training providers, especially the Office of Vocational Rehabilitation to fully implement an outcome or proficiency based foundation for training.

A1.10 An Increase in the Relevance of Course Content

It is assumed that as applied curriculum materials and techniques communicate relevance to real life applications, the student's level of motivation to learn will increase. To assure relevance, contact with industrial and post secondary training communities are maintained their input is included in curriculum planning. The SWTI project engages in the following activities:

- Promotes and subsidize ongoing meaningful discussions between school personnel and representatives from private industry.
- Promote inter-agency visitations between post secondary and secondary training institutions and between private sector and public school personnel.
- Work with individual school districts in developing formal working relationships between schools and local industry including efforts toward options such as apprenticeships, visiting speakers, etc.
- Coordinate district participation in various regional competitions emphasizing the application of technical course content and academic skills.
- Scheduling staff development activities for instructional personnel at all levels in order to promote the relationships between curriculum and skills needed for real life.

A1. 11 Improving Student Skills in the Use of Learning Resources

The approved Tech Prep planned programs will emphasize the preparation of each student as a potential lifelong learner. In this vein, a critical component of instruction will be the development of client skill in using available learning resources such as the electronic library, bulletin boards, electronic mail, and interactive instructional technologies. The Tri-County project emphasizes expansion of the applied academic project to include the following activities:

- Staff training leading to the development of student skills in electronic messaging and data base access.
- Staff training leading to student skill in computer based information retrieval methods.

- Staff training leading to the development of student skill in library and resource facility usage.
- Increased availability of training for students, staff, and parents in the use of learning resources.
- Increasing parental awareness of the availability and use of learning resources.

A2 Third Party Skill Credential Program

There have been ongoing requests by employers for some type of documentation of student proficiency as a means of measuring the readiness of graduates for employment. Sometimes referred to as "portable" certificates or "certificates of mastery" which the students would take with them when seeking employment, the documents would specify the specific skills possessed by the individual. Skill credentials are related to the portfolio development process in that they share an emphasis on objective documentation of skill proficiency. The skill credential differs however, in that it is developed in close cooperation with local employers and reflects an acknowledgment that the student possesses predetermined competencies. At the present time most major technical disciplines and professional societies are in the process of developing skills certification programs. Additionally, objective third party assessment, i.e. the SOCAT tests, are receiving increased prominence as a form of competency verification. Many of the Tech Prep articulation agreements contain provisions for some type of objective assessment. The consortium participates in promoting skills certification by:

- Working with employers to determine skill expectancies and secures samples of private sector skill certification and accreditation requirements.
- Research data relative to similar efforts at state and local levels.
- Hosts seminars and conferences to disseminate information on local and statewide efforts in the area of skill certification.
- Develop a generic model of a skill certificate in a format which can be modified by individual districts.
- Utilizes skill checklists as the means of monitoring pupil performance and progress as part of the work based instruction element.
- Promoting the utilization of industry developed third party testing as the "exit" assessment of graduating seniors.

Element B : Career Guidance and Student Recruitment Activities

A second major element of the School to Work project focuses on improved career counseling services to all students and their parents, but with an emphasis on the group which will not be attending a traditional four year baccalaureate program. This "guidance thrust" involves many components, several of which are interrelated with the concurrent curriculum reform that was outlined in Element A. In many areas, the efforts overlap and a single activity may have both curricular and guidance outcomes. Guidance services will focus on four general populations, students, student's parents, school district instructors, and guidance personnel. At the same time content will be targeted toward the needs of the private sector.

Component B1 Development of Career Plans

An integral part of each student's secondary program is the development of an individualized written career plan that outlines the sequence of courses which will be taken in order to graduate prepared for employment or additional training. At present, career planning emphasizes the final two years of high school, but this fails to address the need to adequately develop a foundation of academic skills. The focus of guidance activities has been expanded to include, at a minimum, the four years of secondary studies and linked to either one year study as part of a Certificate program or as part of a two year associate degree program. Activities in this area include:

- Development of a computerized model "planning guide" which district personnel can use in structuring efficient sequences of courses for students leading to a variety of employment or training opportunities.
- Development of electronic database and printing capacities which will facilitate the development of career guides which are individualized for each local school district.
- Provision of staff development activities describing the existence, construction, and use of career "pathway" documents.
- Development of procedures which will allow districts to update the guides as curriculum changes are made.
- Encouragement of parental participation in the development of student plans.
- Providing guidance to districts relative to securing PDE program approval.

B1.1 Career Assessment and Counseling

Because of the emphasis placed on career planning, it is critical that assessment of student abilities and interests be provided as part of the student's transitional program. Consistent with this objective the Tri-County project will encourage in the development and provision of the following activities:

- Explore career assessment instruments, models, and services.
- Promote the availability of assessment facilities, instruments, and practices.
- Promote assessment of skill competencies and integrate that information into student planning (i.e. incorporation of assessment and portfolio development with program planning).
- Assist in the development of procedures which will provide parents with valid information about the status of their child's vocational and academic skills and interests.

B1.2 Increased Use of Technology in Providing Guidance Services

An objective of the project is to improve the quality and availability of career guidance. With increasing demands on counselor time, attempts will be directed toward identification and development of guidance materials which emphasize "self study" and independent inquiry. This is not to be seen as an effort to replace existing services, rather an attempt to augment the personal contact which they provide. With this in mind, the IU consortium will:

- Work to establish a two tiered multi-media career information system, capable of providing students with self directed exploration of both national and local career guidance information.
- Secure commercial career guidance information, focusing on laser disk or CD-ROM technologies as supplements to printed materials.
- Develop computer databases containing information on local programs and articulation agreements so that general interests established through the commercial materials can be elaborated upon via the use of the locally developed software.
- Assist districts in acquiring the information referenced above.
- Involve local employers in the development of local guidance information systems.
- Integrating school district career counseling with resources available in the community, i.e. Job Centers, college career centers, etc.

Component B2 Development of Student Portfolios

Portfolio analysis refers to the accumulation of documentation relative to an individual's skill proficiencies, and assimilation of that information into a centralized document which the student uses to attest to their level of skill competence. Portfolio use has addresses weaknesses which are present in many current reporting systems and in the future may replace the "report card" as the method by which students document their level of mastery. As with student planning guides, models have been obtained from different sources state and national sources and are available for review in the resource library. At present many of these models stress the "affective" aspects of personal development. While these elements will be addressed in the STW models, the emphasis in the Tri-County project will be on academic and technical skill proficiency documentation. The local project is involved in the following activities:

- Securing copies of exemplary "portfolio" models which are in use at other sites in the commonwealth or which have been recognized for quality at a national level.
- Developing models which local districts can utilize in implementing portfolio analysis procedures within their district.
- Conducting workshops and seminars on the development and use of portfolios.
- Assisting districts in integrating performance based education with portfolio assessment and linking those activities with their strategic planning process.
- Working with private sector personnel in developing "exit" criteria which can be used as mutually agreeable target standards for graduation.
- Development of a centralized computer file of course and proficiency related text which can be accessed and customized by district personnel, thus reducing the "clerical load" involved in individualized plan development.
- Involvement of parents in the design and implementation of the various planning models.

Component B3. Increasing the Perceived Value of Technological Training

Many of the efforts which are included within the guidance component of the School to Work Transition Initiative focus on the need to impress upon students and their parents the concept that technical skill training is a viable option to traditional four year college enrollment. Along with the emphasis on technical training will be an emphasis on the reality of lifelong learning. Activities in this area will supplement and augment existing district guidance services. The consortium's involvement in this area will include the following activities:

- Publicizing information relative to the earning power of graduates of technical vs. academic training.
- Encouragement of those guidance efforts which result in enrollment in technical education training programs.
- The provision of a range of staff training for local guidance counselors.
- Assistance in the development of career centers as a component of existing high school guidance offices.
- Support for student and staff field trips to industrial sites and post secondary institutions.
- Support for technologically related post-secondary recruitment efforts.
- Promotion of the services and opportunities at the regional area vocational technical schools.
- Promotion of the availability of Associate and Certificate level post secondary training programs.
- Development of informational materials which emphasize the value of technical training.

Component B4 Increased Parental Involvement

Project success will depend heavily on achieving the involvement of parents in steering their children into more challenging coursework and increased parental involvement throughout the career selection process. The Tri-County STW Project will achieve increased parental involvement by:

- Developing guidance materials specifically targeted toward parents.
- Providing parents with flyers, pamphlets, and other materials which will acquaint them with the recommended sequence of available courses.
- Encouraging participation by parents in open house, field trips, and career day activities.
- Providing seminars for parents dealing with the use of multi-year career plans and encouraging their involvement in development of such plans for and with their children.
- Utilize existing "family centers" where career related information and professional staff would be made available for parents.
- Utilize available media to publicize the various components of the STW project.
- Involve groups representative of parental interests in the development and operations of the school to work project.
- Work with local companies in order to achieve their support for greater involvement on the part of their employees in utilization of available career resources.

Component B5 Private Sector Participation and Direction in Program Development

Just as it is critical for parents to be directly involved in the School to Work movement, it is equally critical to include input from those sectors of our community who eventually employ the graduates of technical training programs. Through the use of the Tech Prep Business and Industry Committee, the Youth Apprenticeship Stakeholders group, organizations such as the Manufacturers Association and AVTS Advisory Committees, input from a variety of local companies will be solicited. Because much of the thrust behind SWTI is dependent upon private sector involvement, the project will emphasize existing groups who already have established linkages to employers. The consortium will be developing cooperative agreements with agencies who can provide the kind of broad based but objective private sector representation which is needed for successful public-private coordination. It is expected that representatives from private industry will be involved in key planning decisions and will assist in:

- Arranging field visitations by staff, students, and parents to local employers.
- Providing speakers for presentations to school groups.
- Working with high school and post secondary staff on determining the relevance of course content by first hand involvement in development of competency criteria.
- Utilizing employers as external reviewers of program curriculum.
- Assisting in the solicitation of equipment and materials for use in classrooms.
- Using the Steering Committee as a "sounding board" for the development of project activities.
- Assisting in the development of a range of "out of school" educational experiences.

Element C: Work- Based Learning Opportunities

A third major component of the overall school to work initiative is the development of a continuum of "out of school" learning options. Some of the options have existed for many years, primarily at area vocational technical schools, i.e. co-op programs. Others represent new programs which will increase the alternatives now available to students. All of the options share the common characteristic of providing some of the student's educational program through study outside of the regular school building. The goal of the project is to establish a series of options varying in academic rigor and work site demands ranging from mild to significant, but all coordinated under the umbrella of Field Based opportunities.

In prior years Field Based opportunities have emphasized the concept of "Youth Apprenticeship", but the area is much broader than that, encompassing a variety of options ranging from informal volunteer work to highly structured paid placements. It is critical that the project not to "oversell" the potential results and availability of the apprenticeship component because there are many external restrictions on the degree to which this option can be developed.

The Tri-County Consortium promotes various options to filed based learning, including the development and refinement of a local model which utilizes the strengths and resources which already exist for field based training. In doing this, the project emphasizes interagency coordination, private sector involvement in site identification, and flexibility, uniformity and structure within the placement process. As a part of the STW activities, the following field based learning opportunities will be developed.

Component C1 Youth Apprenticeship Placements

The term "Youth Apprenticeship" had been used to refer to a formal 4 year program of studies in which the student is placed onto a job site for part of their secondary academic training during grades 11 and 12 and which continues for two years after graduation. The student is paid by the employer, is assigned an on-site mentor, and has their academic coursework adjusted to integrate with the job site requirements which they encounter.. In order to nurture a positive working relationship with the various types of post-secondary "Apprenticeships" which have been developed by local labor unions, trade societies, and specific employers, the term Field Based Learning will be used in place of the term "Youth Apprenticeship." Field Based Learning represents the most sophisticated and demanding of the various work based options. Our intent in emphasizing the term "Field Based Learning" is to avoid possible confusion to employers and to encourage a cooperative relationship with entities operating "real" apprenticeship programs.

Success in structuring field placements is dependent on the quality of interaction with private sector employers. Every effort will be made to coordinate STW with programs which might be funded through the Depts. of Commerce or Labor and Industry. The services of a Youth Apprenticeship Coordinator, now employed through the Industrial Resource Center, are viewed as an integral part of site identification and student placement efforts. In this way, the project will coordinate activities funded by at least two different state agencies capitalizing on the strengths of each with a minimum of duplication. This is expected to yield advantages both in terms of maximizing financial resources and eliminating confusion on the part of employers who are being called on to consider providing placement sites. The Tri-County Consortium will:

- Integrate PDE funded field based activities with those which might emerge through Departments of Commerce or Labor and Industry funding.
- Integrate field based learning options into one unified network which minimizes "competition" for placement sites.

- Include employer input into the design of eligibility criteria and monitoring expectations. This would include the continued operation of a "Stakeholders Group" made up of representatives of the private sector who have agreed to participate in placements.
- Develop documents and policies necessary to implement field placements including student and employer guides, formal placement agreements, mentor training programs, parent guides, and guidelines for the integration of home school academic programs.
- Maintain a working relationship with Dept. of Labor based apprenticeship programs.
- Develop management systems for the monitoring placements and assessment of student performance.
- Develop guidelines and materials for the recruitment and training of site mentors.
- Coordinate communication between the student's home school academic instructors and the job site mentor.
- Supplement and assist in the training of co-op personnel to expand programs to include internship settings.
- Continue to refine an eclectic model for the expansion of field based learning options to new cluster areas.
- Include the Industrial Resource Center and other employer representatives on the consortium steering committee.
- Encourage interagency staff meetings and the development of working agreements regarding the role of each agency in establishing a continuum of placement options.
- Coordinate and assist in student recruitment activities.
- Participate in developing inter-agency project applications designed to enhance the availability and quality of field based learning placements.
- Emphasize the need to maintain strict eligibility and performance standards on the part of participating students and placement sites.
- Emphasize the position that it is the quality of study placement activities and mentoring, and not the number of placements which determine the success of the apprenticeship program.

Component C2 Co-Operative Education

"Co-op" placements have historically been available to AVTS students as an "on the job" training option. The placements tend to be exploratory in nature, and generally are not governed by the strict agreements with the employer that typify apprenticeship placements. Students traditionally are not eligible for co-op placement until grade 12 and the placements are not integrated directly with the student's academic program of studies. As the concept of a "continuum of out of school placement options" emerges, it will be increasingly possible to articulate movement between exploratory, co-op, and apprenticeship settings. For the most part, the co-op placement will continue as a less structured field based educational option, less demanding in rigor than the formal apprenticeship placement. The SWTI project will utilize the services of AVTS based co-op coordinators as key personnel in implementing a continuum of placement alternatives

It is possible that the expansion of apprenticeship placements to include assignment of students not attending the AVTS may evolve, but emphasis will continue to be placed on AVTS involvement in order to prevent any perception of competition for job sites. Thus, the AVTS co-op coordinators will continue to function as key personnel in the identification of placement sites.

Component C3 Job Shadowing

Job shadowing consists of field placements within which students observe workplace activities. The experience is more passive than Co-op and much less formal than an apprenticeship placement. It is possible that as the whole range of field based placements are developed that job shadowing may emerge as an earlier or less structured precursor to apprenticeship. The SWTI will encourage development of job shadowing placements as a part of a series of placement options. It is possible that a variation of job shadowing may emerge for instructors and employers.

Community Services Work
The least demanding type of out of school learning is the community service component, either voluntary or required. This type of field placement lacks the structure contained in all of the preceding options but still may be useful as an introductory placement or career exploration activity.

Simulated Employment
While not external to the school facility, simulated employment would provide actual work experience within a "business" operated as part of the school curriculum. In effect, this would provide a form of sheltered work experience, useful as an entry level type exposure to the demands of employment.

Component D : Formal Articulation Agreements with Post-Secondary Institutions

An articulation agreement, as defined by the school to work project, is a formal document attesting to the integration of a designated period of secondary instruction and a designated type of post secondary training. It documents a planned transition from secondary to post secondary studies while eliminating any duplication in course requirements which might exist if programs were uncoordinated. The student may receive advanced credit for studies completed at the secondary level, allowing them to take more demanding coursework than would otherwise be possible. This is know as program articulation. Another type of articulation agreement allows the student to complete programs in a shorter period of enrollment, i.e. advanced placement, but this type of agreement does not meet the criteria for advanced rigor inherent in a Tech Prep program.

The articulation agreements will be between the sending school (AVTS or High School) and the receiving school (college, university, proprietary school, or Technical Institute).

The consortium will capitalize on the status of the Intermediate Unit as an objective third party, neither secondary nor post-secondary in its principle function allowing it to facilitate the dialogue which is necessary to establish agreements. It is the intention of the consortium to obtain multi-agency regional agreements (between one college and multiple schools) whenever possible in order to encourage standardization of program content. Because of variations in home school curriculum, agreements between individual school districts and post secondary institutions will need to be more individualized.

Initially, emphasis on the establishment of formal articulation agreements in areas related to machine trades was mandated by PDE, but this is expected to broaden to other areas such as Allied Health, or Business Education. Articulation agreements developed through the consortium will have the following characteristics.

Component D1 Automatic Transition From Secondary to Post-Secondary

Automatic acceptance for post secondary study comes only after instructors at both levels have agreed upon skill prerequisites, instructional content, and assessment measures. To facilitate development of formal agreements the Tri-County Consortium will function as a "third party negotiator" in the development of articulation agreements and will be involved in each of the preceding areas including:

- Hosting forums where instructional staff at both the secondary and post secondary levels can compare and discuss skill prerequisites and ways to assess the acceptability of students who complete coursework.
- Assisting in the identification of mutually agreeable skill assessment instruments and criteria for acceptance.
- Providing curriculum assistance in achieving a smooth continuum of course content
- Assistance in developing the text and layout of formal agreements.
- Promoting the existence of articulation agreements as part of consortium developed guidance materials and parental information packets.
- Research existing agreements which exist in a given field outside the region and compilation of a reference library of agreement documents.
- Providing resources to local school districts which will allow them to purse agreement development.

Component D2 Advanced Placement for Secondary Coursework
Students will receive advanced placement in their Associate Degree or Certificate program based on successful completion of their secondary program. In turn, the students will be provided with more extensive course work within their program of studies than would otherwise be provided, resulting in a more highly trained graduate. Other available options include early graduation or participation in some form of terminal field placement. The issue of advanced placement is at present the subject of some controversy, contrasting advanced placement with requirements for the substitution of advanced studies for any "waived" courses. There are advantages and disadvantages to each position and the issue is being monitored closely.

Component D3 Elimination of Course Redundancy
Since both secondary and post secondary instructors are involved in the development of a unified and mutually agreed upon sequence of studies, the possibility of course duplication will be eliminated. A graphic matrix of courses constituting a "pathway" illustrates the "seamless transition" that is inherent in an articulation agreement.

- The Tri-County consortium will facilitate meetings between instructors at the secondary and post secondary levels so that agreement can be reached on:
  - Skill prerequisites for admission or advancement
  - Mutually acceptable devices for assessment of skill competence
  - Multiple year student course planning sequences
  - Identification of course transfer options.

Component D4 Development of New Certificate and Associate Degrees programs.
The development of articulation agreements is not limited to existing post secondary degree programs. The school to work transition project will attempt, through its liaison persons on the steering committee, to be involved in the development of new degree programs so that it can coordinate their integration into course sequencing at the secondary level. Thus, as new associate degree programs are considered, staff at AVTS sites and home schools will be involved in the development of entry prerequisites and integrate them with their course contents. Two possible areas for exploration include plastics technology and EMT certification. The project will:

•. Coordinate grant applications for development of curriculum leading to new articulation agreements.

Component D5 Coordination of Inter-agency Discussion Groups and Program Evaluation Teams
Articulation agreements are achieved only after personnel at both the secondary (sending level) and post-secondary (receiving level) are comfortable that the agreed upon coursework meets their defined quality criteria. This generally involves "face to face" meetings between the college and secondary instructional staffs in order to present information relative to their expectations. The Tech Prep project will take an active role in scheduling such forums where teaching personnel and administrators at each level can discuss course content, assessment of skill competencies, integration of coursework, etc. Following acceptance, ongoing meetings will be necessary to assure that agreements remain viable and course sequences will continue to need to be reviewed by personnel from the private sector.

Component E : Staff Development Activities

A majority of the preceding activities involve some form of programmatic change. Formal training for a wide range of personnel will be required. Thus, a major activity of the Consortium will be the planning and delivery of high quality staff training focused on the various components of the school to work initiative. In order to be effective, the training will need to be: a) of relevance to field personnel, b) available through a variety of formats, c) available at a variety of times, d) of high quality, e) at low cost to districts, f) targeted to multiple audiences, and g) eclectic in its orientation. The SWTI project will include a wide range of staff development activities designed to encourage the involvement of district personnel and achieve the overall objectives of the project.

Component E1 Seminars and Workshops

One or two day seminars and workshops will be offered with efforts made to reduce or eliminate the cost to agencies for staff attendance. Plans call for participation by district and post secondary staff, as well as parents in the planning and execution of various staff development and training activities. Services will be provided to the following populations:

- Academic instructors (elementary, secondary, and post secondary)
- Guidance counselors (elementary, secondary)
- Curriculum personnel (elementary, secondary, and post secondary)
- Private sector mentors
- Parents
- Administrative staff (secondary and post secondary)
- Teacher training personnel
- Co-op coordinators
- Employers

The content of courses offered through the consortium will include:

- Implementation of the CORD and AIT curriculum materials
- Integration of now fragmented academic subjects
- The need for overall increased academic rigor
- Implementation of generalized applied academics
- Career planning methods
- Skill assessment and documentation of skill levels
- Portfolio development
- Authentic assessment
- Program plan development
- Development of articulation agreements
- Private sector needs and expectations
- Data collection and analysis
- Apprenticeship recruitment
- Apprenticeship participation guidelines
- Mentor training
- Career exploration and guidance options

Component E2 Field Visitations

While formal workshops and seminars play a large role in staff development activities, that format does not utilize the applied learning approach which lies at the heart of what the SWTI project is attempting to implement. With this in mind, a large portion of the school to work transition project will encourage participation in direct activities which center on moving students from the secondary level to the world of work. Visitations to work sites by personnel from local business and industry, inter-agency internships, etc. will all play a role in this component of staff training.

The project will also facilitate the availability of field visitations by various type of personnel:

- Secondary school visitations to post-secondary programs
- Post-secondary visitations to secondary programs
- Private sector visitations to post-secondary programs
- Private sector visitations to secondary programs
- Secondary visitations to private sector programs
- Post-secondary visitations to private sector programs
- Parental visitations to secondary programs
- Inter-agency internships by instructional personnel
- Inter-agency job shadowing by instructional and supervisory personnel

The role of the consortium in this activity will be one of central planning and program coordination.

Component E3 Summer Institutes

Summer institutes will be scheduled in order to permit intensive staff development activities. At the outset, the institutes will focus on curriculum revision, adoption of commercial applied academics systems, portfolio development, and implementation of skills based instruction. Summer institutes may be used to gain certification for instructional personnel in distinct curriculum areas, i.e. CORD. Future institutes will expand to include guidance and post secondary components. Offerings provided through summer institutes will be integrated with staff development programs funded through other sources.

Component E4 Resource Materials Libraries

Adoption of new materials and curriculum reform is often based on first hand experience with those materials. With this in mind, materials related to the school to work initiative will be solicited from programs identified as "models" at both the state and national levels. The materials will be evaluated and then distributed to districts or will be available for review at a centralized review center. When appropriate, multiple copies will be secured and distributed to participating schools. Demonstrations by vendors will be encouraged.

Sample materials will also be purchased or solicited from commercial publishers and provided for review through a curriculum resource library.

Component E5 Conferences

The project will encourage and support the attendance by instructional level personnel at state and national conferences. When appropriate, the project will facilitate group enrollment and/or transportation. Efforts will also be made to bring into the region authors of significant literature or research relative to student preparation, so that regional personnel can hear first hand the work of major authorities in the field.

Component E6 Mentoring Opportunities

As staff obtain experience with various aspects of the curriculum change integral to the provision school to work transition services, efforts will be made to develop a cadre of mentors who can be utilized for direct assistance to personnel who will be at an earlier phase of programmatic change. The Tri-County Consortium will facilitate mentorship through the following actions:

- Development of a formal registry or association of advanced curriculum "experts."
- Development of systems by which new districts or personnel can be "matched" to experienced staff in similar curriculum areas.
- Subsidization of the mentoring experience.
- Development of “Centers” for the advanced training of instructional staff.

Component E7 Integration with Teacher Certification and Masters Degree Programs

Since many regional staff may need to attend formal post baccalaureate classes in order to meet certification requirements or to obtain advanced degrees, the consortium, through its linkages with the higher education institutions, will seek to develop courses relative to the major components of the school to work initiative, specifically applied academics, portfolio development, career guidance, and work site educational programs. The consortium will engage in the following:

- Maintain ongoing communications with education departments of local colleges in order to develop courses in the areas outlined above.
- Clarify certification requirements and/or other continuing education opportunities.
- Develop IU sponsored continuing education courses which would be acceptable for certification credit.

Component E8 Integration with Broad Based Staff Development Activities

Many of the elements of the school to work transition effort overlap or duplicate other components of generic school reform. The efforts of the consortium will be integrated with the overall regional staff development programs of participant agencies including:

- Participate in meetings of regional principals group.
- Participate in meetings of regional guidance counselors group.
- Participate in meetings of regional strategic planning group.
- Participate in meetings of regional curriculum directors group.
- Present regularly at meetings of Superintendents Advisory group.
- Participate in meetings of regional AVTS Advisory group.
- Participate in meetings of AVTS Advisory board group.

Component F : Recruitment Efforts

A major portion of the success of the school to work transition project will depend on the degree to which it is successful in providing information about project activities to various target audiences, including parents, students, instructional staff, administrators, and employers..

Component F1 Develop Community Awareness

To achieve general public exposure, mass media will be utilized. To reach personnel in the private sector, specialized media such as newsletters of professional societies will be used. The Tri-County consortium will:

- Establish working relationships with local newspapers and attempt to have regular items published
- Support the publication of special newspaper supplements and articles dealing with elements of the school to work movement
- Solicit television coverage of project activities
- Participate in radio and television community service programs
- Solicit television and radio participation in special projects
- Solicit corporate sponsorship for special projects
- Develop the local newspaper into an apprenticeship site

Component F2 Targeted Awareness

General awareness activities will need to be supplemented with more detailed information modified specifically for the needs of the target audience.

Generally, these efforts will be of two types, print media, or direct personal contacts. Activities will include:

- Presentations to local civic and social groups
- Presentations to specialized trade societies
- Development of targeted brochures
- Presentations to college level educational classes
- Development of targeted video materials
- Presentations to AVTS advisory committees
- Presentation of information to local legislators
- Development of a "speakers bureau" of personnel active in the SWTI project

Component G : Project Administration

Component G1 Development of General Project Direction

The SWTI Project involves the integration of so many varied components that it is critical that clear direction be established for activities. One purpose of this document is to provide an overview of the "big picture" to which potential participants can respond. To a large degree the SWTI deals with future change, a function which requires a vision of potential outcomes and the allocation of resources necessary to achieve that change. It is the role of the fiscal agent of the consortium to provide the necessary vision and to coordinate the strengths of participant agencies in achieving project goals.

Direction for the consortium should be reflective of input from project staff, personnel from local educational institutions, parents, students, and representatives from the private sector. This document reflects the current status of planned activities based on input of the representative groups.

Project direction should not be driven by the institutional needs of any single type of consortium participant, specifically the existing dichotomy between secondary and post-secondary agencies. It is the intent of the Intermediate Unit, in its role of fiscal agent, to promote dialogue between these two levels and to promote discussion between the constituent agencies.

Component G2 Budgetary Development and Maintenance

Implementation of the activities outlined in this document requires the identification of necessary fiscal resources. Thus, the resources provided specifically for school to work transition efforts need to be integrated with the much larger "pool" of funding for overall secondary and post secondary education. In effect, the SWTI project reflects "seed money" for wide ranging change in areas supported by more extensive funding sources. With this in mind the following activities are proposed:

- Inclusion of personnel in the development of the SWTI plan who are in positions to influence the expenditure of funds within general and technical education at both the secondary and post secondary levels.
- Structure budgetary allocations in ways which guarantee flexibility in participation by persons directly involved in instruction and guidance services.
- Assure that budgetary considerations evolve from programmatic direction, in essence, the budgetary allocations should support the activities outlined in the overall plan.
- Structure budgetary allocations in ways which will guarantee flexibility in staff acquisition, and resource allocation.

Component G3 Project Evaluation

Using this document as a guide, ongoing monitoring of the level of success in implementing projects is essential. Individual components will be reviewed by multiple sources having varying perspectives on the same activity. Inherently, this will involve monitoring at two levels, ongoing monitoring conducted by project staff, and monitoring done periodically by outside personnel. In effect the latter reflects cyclical work sampling while the former reflects ongoing process control. Since a main thrust of the SWTI project is implementation of outcome based education and performance assessment, the management of the project should be operated on the same philosophy and illustrate the principals which are being proposed for implementation at the instructional level. The project will engage in the following activities:

- Utilize the assignment of specific project objectives and supporting competencies in overall management of the project.

- Evaluate outcomes in terms of observable and measurable accomplishment of prerequisite objectives.
- Utilize outside personnel in the evaluation of task accomplishment.

Component G4 Interagency Participation
The success of the project depends on the involvement of a wide range of personnel in the development of project goals, participation in task completion, and monitoring of program performance. This will be accomplished through the following:

- Implementation of a viable multi-agency steering committee which will be responsible for overall direction of the project. This agency will have representation from industry, secondary education, post secondary education, and parents.
- Implementation of a series of task oriented sub-committees generally responsible for major components outlined in this paper. Sub-committees shall be used to provide the critical interagency linkages in major areas such as Curriculum Change, Articulation Agreement Development, Staff Training, etc.
- Maintenance of an ongoing dialogue with sources of funding for initiatives related to the school to work transition initiative. Such agencies shall include the Dept. of Commerce, Dept. of Labor, and the PA Dept. of Education.
- Inclusion of personnel from other educational programs as appropriate. Examples of such projects include Chapter 1, special education, adult literacy, JTPA, specialized remedial programs (JOBS, JAG, STEP, etc.).

Summary

Previously independent projects such as Tech Prep, Youth Apprenticeship, and Outcome Based Education, etc. all share commonalties which made them natural components for consolation under a unified "school to work transition" thrust. Because the activities which are involved are so wide ranging, they can best be developed through an efficient consortium of secondary and post secondary educational providers, parents, and employers. The school to work initiative promotes meaningful curriculum change in the areas of:

- Redefining the location where educational services are delivered.
- Redefining how student progress is monitored.
- Redefining parental and private sector involvement in education.
- Increasing the relevance of what is taught.
- Improving career assessment and counseling.

The school to work "umbrella" is also a natural vehicle for the integration of other federal initiative and plans call for the solicitation of other funds to further enhance components described herein.

It is our belief that the components outlined in this paper represent a comprehensive model for a school to work transition project. This document will be used as a working paper for establishment of such a model within the Tri-County consortium.

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DIRECTORY OF TECH PREP
&
SCHOOL TO WORK PROVIDERS

As a keystone maintains an arch . . . Tech Prep links academic and vocational-technical curricula in secondary and postsecondary education.

TECH PREP is . . .

a procedure to design, develop and implement specific technical preparation programs that are planned and sequential. The programs provide students with a sequence of progressive studies that combine at least the final two years of secondary education with two years of postsecondary education.

Articulated programs combine a common core in math, science and communication with a specific field of technical preparation. Technical preparation is built around career pathways at the secondary level followed by technically system-specific studies at the postsecondary level. Students who complete the Tech Prep Program will be technically and academically prepared to join the work force or continue formal training toward a bachelor's degree.

TECH PREP NICHE IN THE WORK FORCE

WORKER		**EDUCATION**
Unskilled		12 years or less
Craftsperson		12 years with skills
Technician	**Tech Prep Niche**	**14 years**
Technologist		**16 years**
Engineer		17 years plus
Doctor		19 years plus

Commonwealth of Pennsylvania
Tom Ridge, Governor

Department of Education
Eugene W. Hickok, Secretary

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tech prep

The School-Based Component of a School-to-Work System

Keystone in Education

Bureau of Vocational-Technical Education
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